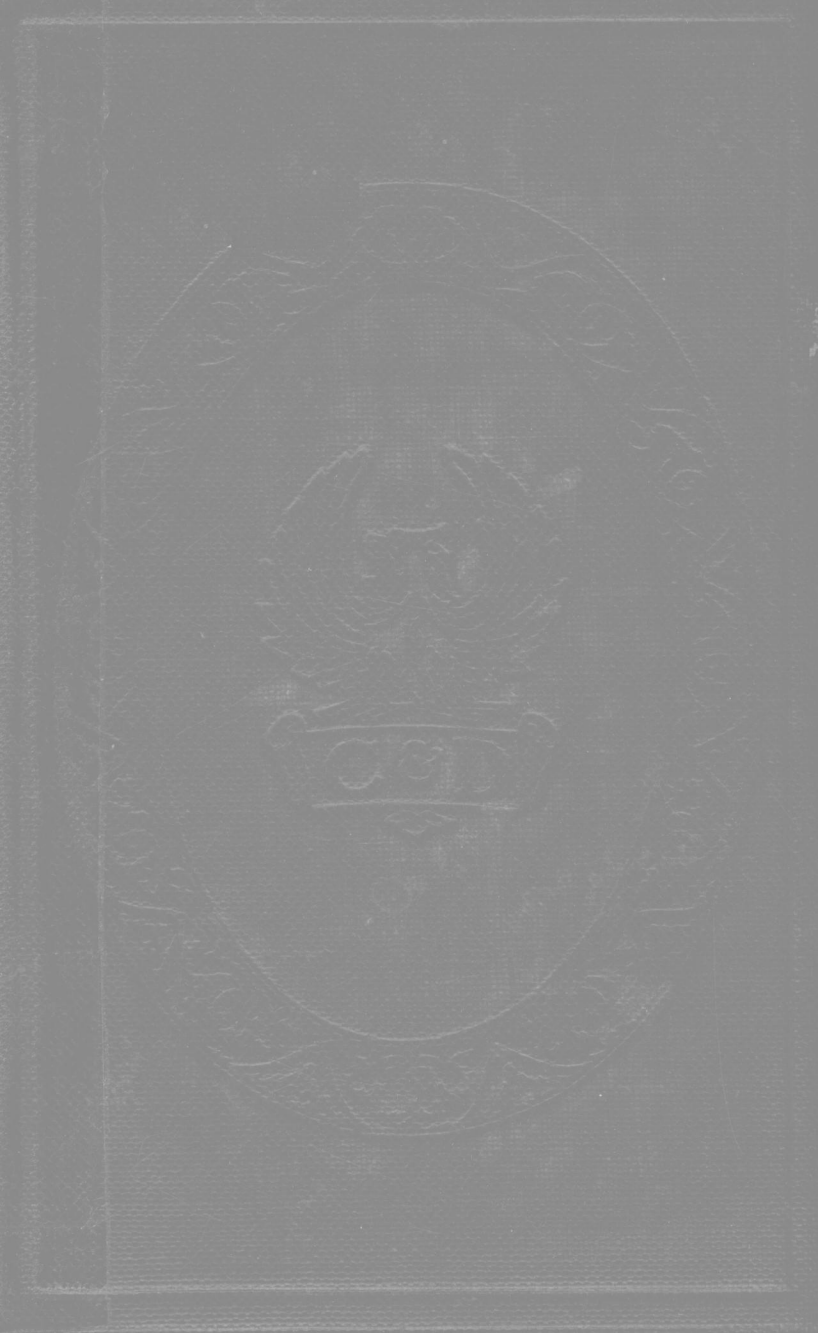

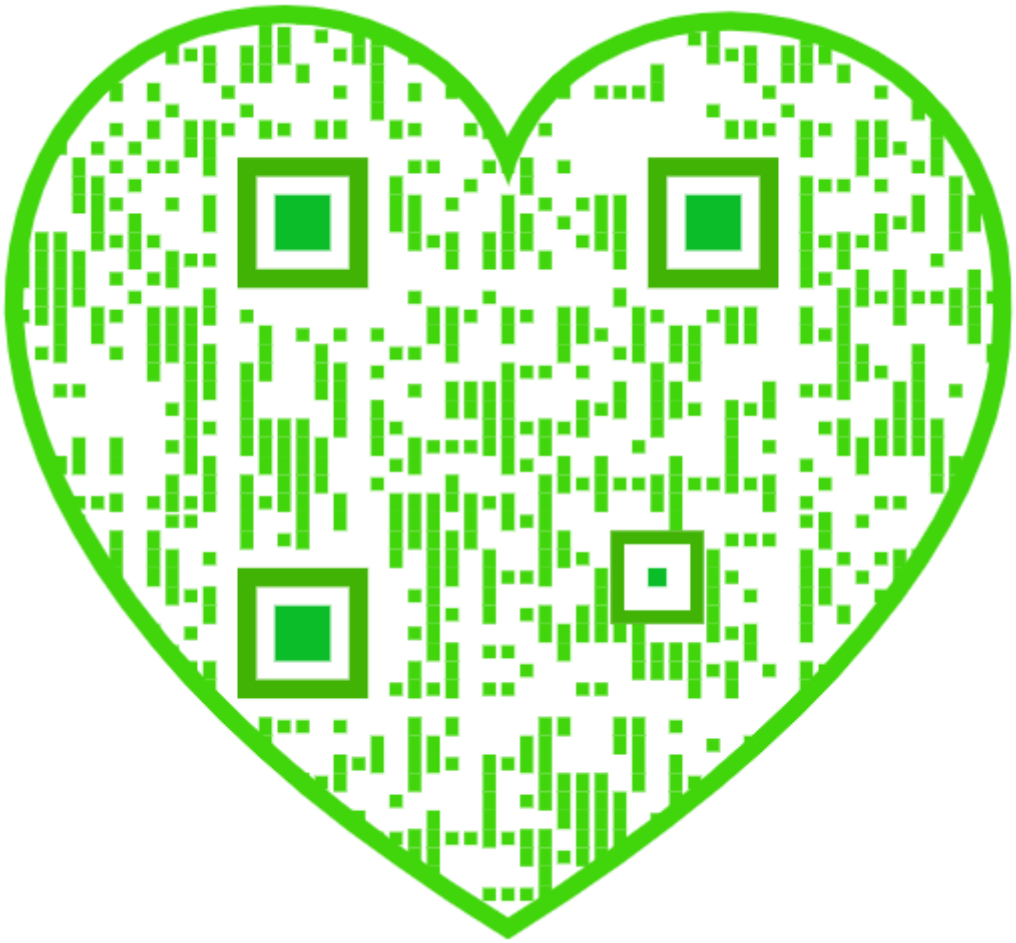

UNIVERSITY OF HONGKONG

PRESENTED BY

Mrs. Belle Warley

in memory of

Montague White Stevens Esq

PHARMACEUTICAL FORMULAS

PHARMACEUTICAL FORMULAS

'P.F.'

BEING

'The Chemist and Druggist's' Book

OF

USEFUL RECIPES FOR THE DRUG-TRADE

SELECTED CHIEFLY FROM 'THE CHEMIST AND DRUGGIST' AND 'THE CHEMIST AND DRUGGIST DIARIES'

BY

PETER MACEWAN

LATE EDITOR OF 'THE CHEMIST AND DRUGGIST'
PHARMACEUTICAL CHEMIST, FELLOW OF THE CHEMICAL SOCIETY, CORRESPONDING MEMBER OF THE SOCIÉTÉ DE PHARMACIE DE PARIS, HONORARY MEMBER OF THE LIVERPOOL CHEMISTS' ASSOCIATION, ETC.

NINTH EDITION, REVISED AND ENLARGED

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PREFACE

TO

THE NINTH EDITION

THE 'editorial note' which follows this preface was written sixteen years ago, and was designed to explain the origin of 'Pharmaceutical Formulas,' and the basis adopted in compiling it. Briefly, the idea was to bring together those formulas, whether for old or new preparations, which pharmacists, and others in the drug-trade and allied businesses, have wanted at some time or other. Such needs have a striking tendency to recur, and it has been the aim of the author, in preparing successive editions, to satisfy fresh demands and keep pace with progress in the art of compounding.

The utility of the volume was expressed by the late Dr. John Attfield, F.R.S., editor of the 'British Pharmacopœia,' in a note respecting the fourth edition, which was only about half the size of the present one. The note is reproduced in reduced facsimile on the next page. It is characteristic of the distinguished chemist's style, being written with the self-copying ink which he always used. Dr. Attfield endorsed his opinion on several occasions before his lamented death,

and that it is shared by many is proved by the publication of so many editions and the undiminished demand.

"Tr. Ferri Muriatici." — This morning after consulting several books I found exactly what I wanted in yours. I must adopt the plan of looking into "Pharmaceutical Formulas" first

Watford
23 Dec '98. J.R.

In preparing the present edition no attempt has been made to depart from the lines upon which the preceding editions were written and revised. Every page of the work has been considered, and additions and emendations effected from the first page to the last, which now is p. 1062, compared with p. 1040 in the eighth edition. This increase of twenty-two pages does not, however, represent fully the additions to the volume, because in many places there has been considerable condensation, and some parts have been omitted which appeared to be no longer necessary as explanatory text. A good example of the changes and improvements which have been effected without much increase of space is afforded in Synthetic Perfumes. This section extends from p. 232 to p. 243, compared with p. 232 to p. 242 in the immediately preceding edition (1911); but whereas the latter dealt with fifty-one subjects, the present edition contains one hundred and thirty paragraphs on the constituents of synthetic perfumes, some of these paragraphs dealing with from three to six substances. Synthetic perfumes were but little known when the first edition (1898) was published, and were mentioned only incidentally,

but the fifth edition (1902) contained notes on twenty-nine synthetic perfume-products. These facts and figures show the great strides made numerically in this department of the art of perfumery, but they are not a measure of the progress in knowledge of the chemistry of these bodies which is reflected in the concise dictionary of the subject that commences on p. 232.

A chapter of 'Pharmaceutical Formulas,' which has been of singular service to Pharmacy is that devoted to Galenical and Medicinal Preparations, beginning on p. 550 and extending to p. 832—a book in itself. It was to this that Dr. Attfield as editor of the 'British Pharmacopœia' particularly referred. The aim of the author has always been to make this chapter supplementary to the 'British Pharmacopœia,' also to include in it formulas from other Pharmacopœias which British dispensing chemists may have occasion to require. The chapter has been carefully revised for the present edition, and formulas designed or adapted by official and quasi-official authorities which have undergone change recently, are here quoted according to the emendations. Many new formulas are incorporated, especially of preparations which are 'known, admitted, and approved remedies' in the sense of the Medicine Stamp Acts of Great Britain. The formulas for such preparations which have been published in *The Chemist and Druggist Diaries* since 1911 are included in the chapter or in the Supplementary Chapter, where also numerous new formulas for a large variety of articles have been inserted. It is desirable to note that 'Pharmaceutical Formulas' was the first book officially approved by the Board of Inland Revenue (Great Britain and Ireland) as a well-known and recognised book reference to formulas of which is accepted as evidence that a medicinal preparation is a 'known, admitted, and approved remedy' exempt from medicine stamp-duty when sold

in Great Britain by a privileged person (see p. 988). Since the administration of the Medicine Stamp Acts was transferred from the Board of Inland Revenue to the Board of Customs and Excise, the latter Board have intimated that they regard the letters 'P. F.' as indicating this work, and it suffices, therefore, to secure exemption (liability not being otherwise incurred) to put these letters on the labels of the medicines, with the number of the formula if there be one, *e.g.* 'Hay-fever Ointment, P.F.,' and 'Indigestion Cure, P. F. 76.'

The Appendix again contains information regarding special conditions applicable to medicinal and other preparations imported into or sold in Australia, Canada, and the United States. These sections have been altered to accord with the most recent regulations or decisions.

The author again desires to acknowledge assistance given by users of the book, especially in Australia, the United Kingdom and the United States. This help has consisted chiefly in suggesting improvements on formulas or processes, the introduction of others not hitherto included, and generally in making the book better than it has been. While the author has had no reason to change the opinion which is expressed in the last paragraph (p. xi) of the Editorial Note, he recognises that the increased size of the book and the greater number of subjects dealt with make it difficult for one man to detect all the 'slips' that even rigid reading and revision do not detect. For these reasons he cordially welcomes notes and suggestions by the users of 'Pharmaceutical Formulas.'

42 CANNON STREET, LONDON, E.C.:
March 31, 1914.

EDITORIAL NOTE

THIS is a book which has been asked for many times during the past twenty years. Chemists who have found a formula from *The Chemist and Druggist* pay their subscription over and over again have frequently suggested to the Editor that the whole of such formulas should be gathered together and published as a book. When these suggestions were accepted, and the work of collating commenced, it was seen that the task was formidable, because of the enormous number and varied quality of the formulas to be dealt with. A goodly proportion of the formulas had to be proved, and the results of the provings are partly embodied in the book. In some cases they show stock and traditional formulas to be useless. It is hoped that the annotations will be helpful to intelligent compounders, and that the hints in regard to packing, labels, and the like will assist retailers.

One feature of the book is that the contents are in a great measure based upon requests from more than a generation of pharmacists for assistance in supplying articles for which they could discover no recognised formulas. Thus is it that the correspondence columns of such a journal as *The Chemist and Druggist* are a fair index to the everyday wants of the trade, and the best of the replies in fifty volumes have been concentrated into the book. The information so collated has

been as far as possible checked by experiment and reference to the original sources, and supplemented by private formulas which have been abundantly proved in practice. The book is not a treatise on practical pharmacy: it is assumed that those who use it are acquainted with pharmaceutical manipulation, and understand the art and mystery underlying such expressions as 'M.S.A.'

The customary signs employed in prescriptions are, with few exceptions, used in the formulas, but, for various reasons, it is well to note that their equivalence in this book is as follows:—

℈ = a scruple of 20 grains.
ʒ = a drachm of 60 grains, or 60 minims.
℥ = an ounce of 437½ grains, or 480 minims.
lb. = a pound of 16 ounces.
O = a pint of 20 ounces.
Cong. = a gallon of 8 pints.

The British rule, 'Solids by weight, liquids by measure,' applies throughout, except where otherwise stated. Care has been taken to modify Continental formulas according to this rule. This is important in dealing with liquids, and is too frequently neglected, with the result that British compounders fail to produce preparations like the originals. For example, a mixture of 1 part of syrupy phosphoric acid and 10 parts of rectified spirit in a German formula should be put as 0·66 part and 12 parts respectively in an English one, because the specific gravity of the acid is 1·500 and of the spirit 0·830. The strength of the mixture is 1 in 11 by weight or 1 in 19 by measure. In the case of formulas which have originated in the United States, and which contain the 'pint,' it has to be remembered that 16 oz. (not 20 oz.) is implied. Failure to recognise these and similar differences in practice is largely responsible for the propagation of a host of unworkable formulas.

In some instances the selection of formulas for specific articles may seem unnecessarily liberal. It stands to reason that a retailer does not require, *e.g.*, more than one or, at the most, two formulas for lavender-water; but here he will find a dozen or two. It may be thought that we have printed everything we could lay our hands upon, but that is not the case. We have *selected*, endeavouring never to duplicate, but to show all the types. Also the fact could not be overlooked that tastes differ: what may please the West-end beauty would not suit the East-end flower-girl. We may occasionally express a preference, personal experience prompting, but we hope to be corrected where our opinions are not found to coincide with the general taste. Indeed, we shall cordially welcome all practical criticism which may reach us from competent sources, and shall endeavour to profit by it.

One word in regard to formula failures. Many a man says a formula is bad when his ingredients are at fault. Weak lime-water does not emulsify like freshly prepared aqua calcis; hard paraffin has not all the properties of beeswax; nor does a geranium-loaded otto of rose give the delightful aroma of the real thing. Such deviations may not always be the cause of failure, but they often have something to do with it; and manipulation has more. We have heard experienced pharmacists say that Lister's formula for boric ointment is unworkable, and have seen apprentices turn it out beautifully.

42 CANNON STREET, LONDON, E.C.:
April, 1898

SPECIAL OBSERVATION

IT is not claimed that formulas for preparations which occur under titles similar to those of secret remedies are the original formulas in the possession of the proprietors of such preparations, and compounders and retailers are cautioned in regard to the use of titles in which a proprietary right may have been established by advertisement, registration, or user.

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PHARMACEUTICAL FORMULAS

TOILET PREPARATIONS AND SPECIALITIES

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THOSE extremely miscellaneous preparations called 'Toilet Requisites' are, in many respects, as important as any class of goods retailed by chemists and druggists, for they appeal to the tastes of the refined and the rich—to the beautiful and those who wish to be—and they afford the retailer splendid opportunity for exhibition of skill in compounding and taste in packing.

In certain respects the trade in toilet-preparations is unsatisfactory—this mainly from the ethical side, and because the public expect too much from the class of specialities called 'beautifiers.' It frequently happens that the higher priced an article is, and the more highly it is vaunted, the greater is its success. This applies particularly to the class of articles we are now dealing with, and is a source of danger to the compounder's self-respect. But it should at the same time be observed that a trifling fault in the complexion of a beautiful woman may be regarded by her as quite serious, and she does not grudge to

pay well for a preparation which will remove it. Whether the preparation is simple or complex, intrinsically dear or cheap, does not concern her. An instance may be mentioned. In dry atmospheres the skin is prone to exfoliate, thus losing its peachlike bloom. This is prevented by the application, after washing, of 1-per-cent. aqueous solution of glycerine, and there is a speciality consisting essentially of this for which many a Society Dame pays a fancy figure. The name is attractive. We know of another case in which a guinea a bottle was paid by scores of women for a simple carbolated lotion because it was prepared from a recipe belonging to a beautiful Princess.

There is a sameness in principle about the majority of applications for the skin, especially lotions, whether traditional or modern. Lotions can be grouped into four classes: first, the cooling, in which there is a fair proportion of spirit, with or without glycerine or an antiseptic, so that on application to the heated skin rapid evaporation of the spirit cools. A second group is emollient, and contains fatty matter in some form, or glycerine, so as to soften the cuticle. The popular creams belong to this group, and though they may differ widely in appearance the beneficial ingredient is a fat or glycerine. There has in recent years been a demand for non-greasy skin-creams. These are based on stearate of soda, and are in reality soaps, modified according to individual taste. A full account of these creams is given in the Supplementary Chapter. The so-called beautifiers containing mercuric chloride or less powerful antiseptics are really healing lotions. They form a third group; and the fourth comprises protective lotions in which a powder of some kind is suspended in a medium of the first or third group, or in glycerinated water. There is little doubt that such preparations are beneficial to the skin when associated with sound hygienic conditions. The toilet specialist's preparations are of service as an adjunct, and frequently correct blemishes which the daily toilet does not touch. 'Toilet-articles' are not liable to medicine stamp-duty in Great Britain unless sold as medicines or medicaments for the prevention, cure, or relief of any human ailment (*see* Appendix).

SKIN CREAMS AND LOTIONS

Complexion Beautifier

Acid. nitric. dil.	℥ij.
Spt. rect.	℥iij.
Ess. rosæ alb.	℥ss.
Ol. neroli	♏x.

M. et adde

Sol. hydrogen. perox. (10 vol.)	℥ij.
Glycerini	℥iij.
Tr. cocci	℥j.
Aq. ad	℥xl.

M.

After a few days filter.

Directions for Use.—Wet a corner of a serviette with the lotion and apply to the face, neck, arms, and hands after washing; then dry.

Eau de Beauté

(Formerly sold by Mme. Bargasse, who said she imported it from Mexico)

Hydrarg. perchlor.	gr. xij.
Camphor.	gr. xv.
Zinci sulphat.	℥j.
Plumbi acet.	℥j.
Spt. rect.	℥ss.
Ovi vitell. unius.	
Aq. rosæ ad	℥viij.

Dissolve the sublimate and camphor in the spirit by trituration. Mix the yolk of egg with 6 oz. of rose-water. Dissolve each of the salts in ½ oz. of rose-water, add first the spirit solution, then the zinc solution, and finally the lead solution, shaking gently, and make up to 8 oz.

Eau des Fleurs

Ol. lavand.	℥ss.
Ol. bergamot.	℥ss.
Ol. neroli	℥ij.
Ol. aurant.	℥ij.
Ol. caryoph.	℥j.
Mosch.	gr. iv.
Spt. rect.	Oiv.
Aq.	Oiv.

After a week filter through magnesia.

A cooling application for the skin, and at the same time a pleasant perfume.

Eau de Pagliari

Aluminis	℥j.
Acid. benzoic.	gr. x.
Tr. benzoin. simp.	℥j.
Aq.	℥x.

Dissolve the alum in the water, then the acid, add the tincture, shake well, and filter.

NOTE. — A modification of *eau hæmostatique* introduced by Pagliari, a pharmacist of Rome.

May-Dew Lotion

Aq. destil.	℥v.
Pulv. boracis	℥j.
Glycerini	℥ss.
Sodii sulphitis	℥ij.
Aq. rosæ trip. ad	℥x.

M.

Put up in 10-oz. white round bottles and label as follows :—

THE ENGLISH

MAY-DEW LOTION

HAS NO EQUAL FOR GENERAL USE AS

A Toilet Table Companion.

It cools and softens the skin when hot, dry, and painful from exposure to sun or wind, or heated by exercise. It is of great use in chafing, redness, and roughness.

Apply freely with a small sponge.

(*Name and Address.*)

Sulphur Skin-lotion

	A	B
Zinci sulphocarbol.	℈j.	—
Zinci oxidi	ʒij.	ʒj.
Sulphur. præcip.	ʒj.	ʒiv.
Aq. coloniensis	ʒvj.	—
Glycerini	ʒvj.	ʒj.
Aq. ad	ʒvj.	—
Aq. rosæ ad	—	ʒxx.

Dissolve the sulphocarbolate in the water. Mix the oxide of zinc and precipitated sulphur with the glycerine in a mortar, and to this add the eau de Cologne; transfer to a bottle, and wash out the mortar with the water.

Either lotion may be coloured with 2 grains of carmine triturated along with the oxide of zinc.

Turkish Complexion Wash

Liq. ammoniæ.	ʒij.
Spt. myrciæ	ʒij.
Aq. rosæ	ʒij.
Pulv. boracis	ʒj.
Glycerini.	ʒl.
Aq. destil.	ʒxx.

M.S.A.

Put up in 8-oz. white rounds; cap with skin, and label as here shown:—

This preparation is exactly similar to that used by the ladies of the Sultan's seraglio.

TURKISH

COMPLEXION WASH

Whitens and beautifies the skin; removes tan, freckles, and roughness; and keeps the complexion clear and brilliant under all circumstances.

Apply with a soft woollen cloth.

(*Name and Address.*)

Startin's Skin-lotion

I

Zinci oxidi	ʒij.
Calaminæ.	ʒij.
Sulph. præcip.	ʒj.
Glycerini	ʒiiij.
Aq. rosæ ad	ʒij.

If desired 1 gr. of perchloride of mercury may be added.

II

Potassii chloratis	ʒj.
Pulv. boracis	ʒij.
Glycerini	ʒx.
Aquæ rosæ	ʒxxv.
Otto rosæ	♏j.
Spt. rectificati	ʒss.

M.S.A.

Magnolia Balm

Zinc oxide.	ʒiij.
Otto of rose	♏v.
Distilled water	ʒxvj.

This is better if the otto is mixed with S.V.R. ʒss., the solution poured off from the stearoptene, and then mixed with the zinc. The lotion may be coloured with carmine: The Original appears to be so, and more resembles the following:—

Zinc oxide	ʒij.
Carmine	gr. j.
Oil of bergamot	♏v.
Oil of lemon	♏v.
Otto of rose	♏ij.
Glycerine.	ʒij.
Water to	ʒviij.

Glycerine Balm

Zinci oxidi (Hubbuck's)	ʒiiss.
Glycerini.	ʒiv.

Rub thoroughly until the mixture is perfectly smooth, then add

Otto rosæ	♏xx.
Ol. neroli	♏xv.
Ol. amygdal. essent.	♏v.
Ol. bergamot.	♏x.
Spt. rect.	ʒss.

Finally add

Aq. rosæ tripl.	ʒij.
Aq. ad	ʒxxx.

Label appropriately, and with mall 'Shake the bottle.' When

this lotion is applied to the face and hands occasionally—*i.e.*, always after washing or after exposure—it keeps the skin smooth and soft.

Zinc Hydroxide, prepared by precipitation of solution of zinc sulphate (1 in 20) with ammonia solution, is smoother than zinc oxide, and is stated by Lucas to be used in French face-preparations which produce a velvety appearance. After well washing the precipitate from the sulphate by decantation, make the product from 2 oz. up to 18 oz. with distilled water and add 2 oz. of glycerine. Keep this as a stock preparation, using 1 oz. as equivalent for cosmetic purposes to a drachm of zinc oxide.

Pimple-lotion

Crystallised alum	ʒj.
Salt	ʒj.
Sublimed sulphur	ʒj.
Sugar candy	ʒij.
Spermaceti	ʒij.
Elder-flower water	ʒiij.
Distilled water	ʒiij.
Brandy	ʒx.

Reduce all the solids to fine powder and rub up with the mixed liquids.

'The lotion to be applied at intervals during the day upon linen rags, which should frequently be changed.'

Curious as this lotion appears to be, it is an effectual and quick remedy for eruptions on the face. *See* also *C. & D.*, 1913, I., 319.

Emollient Summer Lotion

Glycerini	ʒj.
Aq. mellis	ʒj.
Aq. lavand.	ʒiij.
Aq. flor. aurant.	ʒj.
Aq. flor. sambuci	ʒiv.
Otto rosæ	gtt. ij.
Spt. rect.	ʒss.

Dissolve the otto in the spirit, and mix with the rest of the ingredients in the order given. Filter.

This lotion is a very superior article, and retails at 6*d.* per oz. Put it up in nice bottles, preferably of amber glass.

EMOLLIENT SUMMER LOTION

SOFTENS THE SKIN,

IMPROVES AND PRESERVES

THE COMPLEXION,

Rendering it Clear and Beautiful.

Removes tan, sunburn, freckles, and any roughness, irritation, or redness caused by exposure.

Apply to the skin by means of a soft linen cloth, especially after washing.

Complexion Beautifiers

I. (Similar to Madame Ruppert's)

Corrosive sublimate	gr. viij.
Tincture of benzoin	ʒj.
Water to	ʒviij.

Mix. Apply night and morning.

II. (Similar to Gowland's Lotion)

Blanched bitter almonds	ʒj.
Rose-water	ʒv.

Make a milky emulsion, strain, and add

Mercuric chloride	gr. ss.
Ammonium chloride	gr. ij.
Eau de Cologne	ʒss.
Cherry-laurel water	ʒss.

Mix.

Supposed also to be like Kalydor, but it is not.

Skin-lotions have generally the property of removing eruptions or redness caused by hygienic errors. They are not in the true sense preservatives. For the latter purpose emollients are essential; hence by far the greater proportion of complexion-fluids are creamy substances, containing glycerine or an oleaceous body. Milk of roses is the oldest type, then came glycerine and cucumber, and now skin creams or pastes made with sodium stearate hold the field. Each is an emollient with a soapy basis. Glycerine well diluted (*see* page 2) prevents the skin drying to the peeling-off point. Fatty matters should not be used as preventives, for even in a thin layer on the skin they provoke blistering under a hot sun. The rule should be *glycerine before exposure, fats after exposure.* With suitable modification of the perfume some of the recipes which follow afford preparations able to carry any fancy name which the retailer chooses.

Milk of Roses

I

Blanched almonds	ʒij.
Curd soap	ʒss.
Spermaceti	ʒij.
Almond oil	ʒss.
Rectified spirit	ʒss.
Tincture of benzoin	ʒij.
Otto of rose	mv.
Oil of rose-geranium	mv.
Glycerine	ʒiiss.
Rose-water to	ʒxx.

Melt the spermaceti and oil together, add the curd soap, and continue the heat until uniform; then transfer to a warm mortar and add gradually about an ounce of the rose-water boiling. Beat up the almonds well in another mortar and add the spermaceti mixture to this paste. Mix thoroughly and stir in the remainder of the hot rose-water to form an emulsion. To this add the oils dissolved in spirit and tincture, strain through fine calico, and make up to 20 oz. with rose-water passed through the material on the strainer.

An alternative process is to pound the soap and almonds in a warm mortar, add the spermaceti and almond oil heated together, rub thoroughly, emulsify with the hot rose-water, and finish as above.

II

Curd soap	ʒss.
Cold-cream	ʒj.
Distilled water	ʒxxxij.
Otto of rose	ʒss.
Rectified spirit	ʒj.

Shave the soap into shreds and dissolve in 2 oz. of the water by the heat of a water-bath. Incorporate it with the cold-cream in a warm mortar, and gradually add the rest of the water (tepid) to form an emulsion. Transfer to a bottle and add the otto dissolved in the spirit. Shake well. Benzoic acid ʒss. dissolved in the spirit improves it.

III

Blanched bitter almonds	ʒij.
Tincture of benzoin	℥ss.
Soft soap	ʒj.
Rose-water	℥viij.

Beat up the almonds with the soft soap, emulsify with the rose-water, strain, and add the tincture.

IV

Tincture of benzoin	℥ss.
Tincture of storax	ʒij.
Spirit of rose	ʒij.
Rectified spirit	℥iiss.

Mix and add to

Rose-water	℥xviss.

Give one shake.

V

Liq. plumbi subacet.	ʒij.
Glycerini	℥ss.
Spt. rect.	ʒij.
Spt. rosæ	℥ss.
Aq. lavand.	ʒij.
Aq. destil. ad	℥xvj.

Mix all together, adding the liq. plumbi last.

Lait Virginal

Tincture of benzoin	ʒij.
Rose-water to	℥viij.

Mix.

A proof-spirit tincture gives the best result, but the milk is greatly improved by the addition of glycerine ʒiij. to the water. Orange-flower water or other aromatic water may also be used.

The first formula for milk of roses is the best. It is typical of the old-fashioned article. There are several modifications of this form, but none gives so good a result as No. I., or a lotion so nice in all respects. It is a good, soothing application, and keeps well. No. II. is a simple and quickly made milk, which does not separate. It is apt to become stringy. Nos. III. and IV. are characteristic French formulas. These are excellent lotions, IV. and V. especially being of a highly cooling nature owing to the spirit which they contain.

Cucumber Cream.—A formula for a preparation similar in appearance to the original glycerine and cucumber was first published in *The Chemist and Druggist* in 1886, as a suggestion, and all which have since seen the light of day are more or less modifications of it. No. I. formula subjoined is the 1886 one.

I

White glycerine soap	℥ss.
Cucumber ointment	ʒj.
Ess. Jockey Club	℥ss.
Rectified spirit	ʒj.
Tepid distilled water	℥xxxij.

Prepare as stated under No. II.

II

Curd soap	℥ss.
Cucumber ointment	ʒj.
Spirit of cucumber	ʒij.
Oil of rose-geranium	ʒss.
Distilled water	℥xxx.

Dissolve the soap in 2 oz. of

water by boiling. Put the ointment in a very warm mortar and mix the soap solution thoroughly with it; then add the rest of the hot water slowly, stirring well all the time to produce a uniform cream; dissolve the oil in the spirit and add to the emulsion contained in a bottle, shaking well. Another good plan which seldom fails is: Melt the pomade on a water-bath, and dissolve the soap in hot water separately. Put together and shake until nearly cold, then add the rest of the ingredients.

III

Curd soap	ʒss.
Distilled water	ʒiss.
Cucumber pomade	ʒiij.
Glycerine	ʒj.
Perfume	a sufficiency
Water to	Oij.

Dissolve the soap in the water and mix well with the pomade previously melted in a large and hot mortar. Allow to stand twelve hours, then add the glycerine and perfume (ol. rosæ geran. ♏xx., ol. limonis ♏xx.), and gradually work in the rest of the water. Make up to 2 pints and strain.

IV

Warrick's jasmine pomade	ʒiiss.
Powdered white Castile soap	ʒv.
Powdered borax	℈ij.
Otto of rose	♏xx.
Oil of lemongrass	♏v.
Rectified spirit	ʒiv.
Glycerine	ʒviij.
Water	ʒxxv.

Mix the first three ingredients in a mortar, dissolve the essential oils in the spirit, and add to the glycerine and water previously mixed. Now emulsify the fatty mixture with this solution by adding it gradually and with constant stirring.

V

Powdered Castile soap (white)	ʒss.
Powdered borax	ʒij.
Cucumber pomade	ʒij.
Cherry-laurel water	ʒiij.
Rectified spirit	ʒiij.
Water	Oij.

Triturate the ointment with the soap and borax into a uniform paste, then add the water little by little, finally the cherry-laurel water and spirit. Millefleurs, violet, or Ess. Bouquet may be used as perfume.

The last two recipes are excellent. By omitting the cherry-laurel water of No. v., and replacing it with tincture of orris, we get an excellent Lait d'Iris. It is also a good basis for a Superb Complexion-lotion. For this purpose add hydrarg. perchlor. gr. j. (dissolved in the spirit) to each ounce of the lotion, and tint it pink with liquor cocci. A smart man can put up any of the preparations in taking styles, colouring and perfuming to suit the name or names adopted. The following is a different style :—

Lait de Concombre

Pulv. gum. acaciæ	℈v.
Ol. sesami	ʒvj.
Aquæ	ʒiv.

Mix the oil and the gum intimately in a mortar, then add the water, and stir diligently until the whole is perfectly incorporated.

Next add

Aq. rosæ	ʒviij.

Transfer to a bottle, shake, and add the following :—

Aq. coloniensis . . .	ʒj.
Spt æther. nitrosi . .	ʒj.
Spt. camphoræ . . .	ʒj.
Tr. benzoin. simp. . .	ʒss.

Mix well.

Cucumber Ointment or Pomade

Lard	ʒx.
Suet (veal)	ʒvj.

Melt together and add

Tolu balsam . .	gr. ix.

Dissolved in

Spirit . . .	a sufficiency

Then add cucumber juice ʒxij. in two portions of ʒiv. and ʒviij., stirring occasionally for four hours after the first addition and for another hour after the second. Finally pour off the juice, melt the fat on a water-bath, and pot. When cold cover with a layer of rose-water.

NOTE.—Some cucumber pomade is made with lanoline, and is useless for making the cream.

Cucumber Paste may be made according to formula No. III.—*i.e.*, the product as it stands at the end of twelve hours—adding to each ounce tr. benzoin. simp. ɱxx.

Cucumber Juice.—Washed unpeeled cucumbers are grated and pressed. The juice is heated, skimmed, and boiled for five minutes, then cooled and filtered. Now add 1 part of rectified spirit to 2 parts of juice, let stand for twelve hours or more, and filter.

Spirit of Cucumber is made by mixing three volumes of juice with one volume of rectified spirit, allowing the feculence to subside, and distilling three volumes from the clear liquor. Another method is to macerate 28 lbs. of crushed cucumber and a gallon of rectified spirit for a day, and distil 1½ gallon.

Glycerine Cream

I

Almond oil . . .	ʒviij.
Spermaceti . . .	ʒiij.
White wax . . .	ʒj.
Borax	ʒss.
Glycerine	ʒiij.
Orange-flower water . .	ʒj.
Oil of neroli . . .	ɱv.
Otto of rose . . .	ɱv.

Melt the first three ingredients together, and transfer to a hot mortar. Dissolve the borax in the glycerine and orange-flower water, and add a little at a time to the mortar contents, stirring well to produce a nice, uniform cream. Finally add the perfume.

II

Pulv. tragacanth. . .	ʒij.
Ol. rosæ geran. . .	ɱxv.
Spt. rectificat. . . .	ʒss.
Glycerini	ʒiij.
Aquæ	ʒvj.

Dissolve the oil of rose-geranium in the rectified spirit and add to the tragacanth contained in a mortar ; mix well, then add all at once the glycerine and water, previously mixed, and stir until uniform.

With ionone as perfume, in place of rose-geranium, and a drop of solution of aniline-blue to colour it, it becomes *Violet Jelly*; using spirit of cucumber (tinted with tr. cannab. ind.) instead of rectified spirit we get *Cucumber Jelly*; and a drachm of tr. benzoin. simp. added to the rectified spirit gives us *Oatmeal Jelly*. Bismuth oxychloride, in the proportion of not more than 10 grains to the ounce, is sometimes added.

No. I. cream is a healing agent for hands and face when rost-bitten, chapped, or sunburnt. It should be put up in opaline jars or wide-mouthed bottles with celluloid caps. It resembles cold-cream, and is used in a similar manner. No. II. has been sold as 'Cream of Roses' and under other names, as indicated. It is put up, like No. I., for summer and winter use.

Honey-and-Almond Cream

Cold-cream	℥ss.
Almond oil	℥ss.
Glycerine	℥ss.
Boric acid	ʒj.
Solution of soda	℥iss.
Quince mucilage (ʒj. seeds)	℥v.
Water to	Ov.

Stir the cold-cream, almond oil, and solution of soda together until a uniform soapy emulsion is obtained. Dissolve the boric acid in 60 oz. of warm water; to this add the glycerine and quince mucilage, and add the mixture slowly, and with constant stirring, to the mortar-contents. Perfume with spirits of almonds and rose when cold, and make up.

Lanoline Toilet Cream

Rieger's almond soap	ʒj.
Distilled water	℥j.

Dissolve by heat, and mix with

Lanoline	℥j.
Glycerine	℥j.

Use a warm mortar for the mixing, and perfume with rose and neroli.

Lanoline-and-Cucumber Cream

Add cucumber pomade ℥ss. to the foregoing.

Lanoline Cream

I

Lanolini anhydrosi	℥j.
Vaselini	℥j.
Glycerini	℥iss.
Ol. lavandulæ	♏xl.

II

Lanolini hydrosi	ʒiij.
Glycerini amyli	ʒiv.
Acidi salicylici	℈j.
Spt. rosæ	℥ss.

III. Lanolimentum Leniens, D.A.V.

Mix together wool-fat 400, olive oil 200, and white vaseline 100, and when cold add glycerine 45, water 250, vanillin 0·5 dissolved in S.V.R. 3, oil of bergamot 5, and oil of lemon 5 (all by weight). Mix well, and put up in tubes.

Crème de Toilette

For the removal of sunburn, freckles, comedones, and similar affections:—

Lanoline	ʒv.
Almond oil	ʒv.
Precipitated sulphur	ʒv.
Oxide of zinc	ʒiiss.
Violet extrait	℥ss.
Tincture of alkanet	a sufficiency

Make an ointment, using sufficient of the tincture of alkanet to impart a flesh colour.

Lanoline toilet cream is an excellent application for chapped hands, lips, or face. It should be applied to the parts affected, and in ten minutes washed off with tepid water and soap. 'The lanoline remains as a fine, adherent layer, replacing the natural fat, and restoring the pliability of the skin.' It is useful to note here that a mixture of 1 part of anhydrous wool-fat and 3 parts of soft paraffin takes up its own weight of glycerine without separation.

Malvina Cream

White vaseline	ʒvj.
White wax	ʒj.
Spermaceti	ʒv.
Subchloride of bismuth	ʒvj.
Perchloride of mercury	gr. v.
Otto of rose	♏vj.
Oil of bitter almonds	♏j.
Rectified spirit	ʒss.

Melt the first three ingredients together, and while cooling incorporate the subchloride with the basis in a warm mortar. Make a solution of the last four ingredients and add to the mortar-contents, stirring until uniform and cold. In cold weather use only half the quantities of wax and spermaceti.

Lanoline Milk

Pulv. sapon. castil. alb.	ʒiv.
Pulv. boracis	ʒij.
Lanolin	gr. 320
Ol. cocos	ʒij.
Pulv. tragacanthæ	gr. xij.
Aquæ	ʒvij.

Rub together for a quarter of an hour, then add gradually, and with constant stirring

Aq. rosæ (40° C.)	ʒx.

Shake well and perfume.

Malvina cream is an American preparation 'warranted to remove freckles, beautify the complexion, and preserve the smoothness of the skin.' It is used with Almond Lotion 1.

Almond Lotions

1

Perchloride of mercury	gr. ij.
Oxide of zinc	ʒiij.
Heliotrope perfume	ʒij.
Almond emulsion to	ʒxvj.

2

Blanched almonds	ʒiv.
Curd soap	ʒss.
Oil of bitter almonds	♏x.
Oil of bergamot	ʒj.
Rectified spirit	ʒiv.
Orange-flower water	ʒxij.

Dissolve the soap in the water by warming, and add gradually to the almonds beaten up in a mortar. Strain, and add the oils dissolved in the spirit. Mix well.

Almond Cosmetic Cream

Almonds, blanched	ʒj.
Rose-water	ʒiv.

Beat the almonds to a paste and add the rose-water; strain, heat to boiling point, and add

White wax	ʒj.
Almond oil	ʒij.
White Castile soap	ʒj.

Mix thoroughly and add

Saturated boric-acid solution	ʒij.
Eau de Cologne	ʒj.
Oil of bitter almonds	♏iv.
Oil of rose-geranium	♏v.
Glycerine	ʒj.

Borax ʒss. is sometimes used in place of boric acid.

Non-sticky Cosmetic Cream

Cornflour	ʒiij.
Boric acid	ʒij.
Carbolic acid	ʒss.
Glycerine	ʒvj.
Distilled water	ʒxiv.
Perfume to suit.	

Mix the cornflour with 1 oz. of water, add the rest and bring to the boil. Dissolve the boric and carbolic acids in the glycerine and add to flour mixture. Lastly add perfume.

Foamy Toilet Cream

Agar-agar	3 grams
Water	250 c.c.
Stearic acid	15 grams
Sodium carbonate (monohyd.)	4 grams
Oil of theobroma	15 grams
Rectified spirit	10 c.c.

Dissolve the agar-agar in 150 c.c. of water and strain. To 100 c.c. of water in a water-bath add the stearic acid and the sodium carbonate; when action ceases add the theobroma and agar-agar. Mix thoroughly by means of an egg-beater; then remove the dish from the water-bath and continue agitating the mixture until a uniformly smooth lather, measuring about three times the volume of the contained liquid, results. When nearly cold add perfumes.

Glycerine 5 c.c. may be used instead of theobroma oil, and agar-agar omitted to make *Vanishing Cream*. *See* also p. 838.

'Frozen Foam' is registered as a trade-mark, No. 284,928 (1906), and must not be used except by the owners.

Honey Paste

Ol. amygd. dulc.	ʒij.
Cetacei	ʒij.
Mellis	ʒj.
Otto rosæ	gtt. xv.
Ol. lavand	gtt. vij.

M.

Toilet Paste

Adipis benzoat.	ʒj.
Ceræ flavæ	ʒj.
Ceræ alb.	ʒij.
Calaminæ alb. (zinc. carb.)	ʒj.
Carmin.	gr. ss.
Otto rosæ	ɱij.
Ol. limettæ	ɱij.
Ess. moschi	ɱv.

Melt the first three ingredients and mix in a warm mortar with the calamine and carmine, previously triturated. Add the perfumes.

This paste is used (warm) as a beautifier of the skin. It was originally made by a Frenchwoman, who charged 30*s*. for a 1½-oz. upright covered pot of it.

Winter Cream

Camphorated oil	ʒss.
Borax	ʒij.
Glycerine	ʒvj.
Solution of potash	gtt. vj.
Oil of bergamot	gtt. v.
Oil of neroli	gtt. ij.
Water	ʒiv.

Dissolve the borax in ʒj. of water and add the potash; with this solution emulsify the mixed oils. Dilute the glycerine with the rest of the water and add gradually.

Emollient Ointment

Vaselini	ʒviij.
Ceræ flavæ	ʒij.
Benzoini	ʒj.
Gum. thus	ʒij.
Tereb. venet.	ʒij.

Melt together over a water-bath and strain through lint. Then add when sufficiently cool

Camphor.	ʒj.
Ol. eucalypti	ʒss.

This preparation is a valuable one for those chaps and cracks of the skin which so persistently resist the healing influence of glycerine and similar emollients. Should be warmed at the fire before use.

GLYCERINE JELLIES

I

Thin French gelatin	ʒiv.
Water	ʒv.
Glycerine of borax	ʒx.
Triple rose-water	ʒvj.

Soak the gelatin in the water all night in a gallipot, and next morning place the pot in a saucepan with water, and heat until dissolved. Then add the glycerine and the rose-water, previously mixed with a teaspoonful of white of egg. Heat until the albumen coagulates, and filter while hot through a twill bag.

II

Gelatin	ʒj.
Water	ʒxxiv.
Glycerine	ʒxij.
Otto of rose	♏x.
Thymol	gr. ij.
Rectified spirit	ʒj.

Prepare as No. I.

The jelly may be coloured red with cochineal, the colouring being added to the water; or golden with a little saffron, a grain of which may be infused in the last water, which in this case may be triple orange-flower instead of rose. Elder-flower odour is obtained by using essential oil of elder; in this case colour the jelly a faint green with tincture of chlorophyll. The very finest gelatin should be used in order to get a transparent preparation. This is now obtainable in very thin sheets, and of various colours, so that no additional colouring is required.

Carbolated

Isinglass	ʒj.
Glycerine	ʒxvj.
Water	ʒviij.
Carbolic acid	ʒj.

Soak the isinglass in as much water as will cover it, and when soft pass through a No. 40 sieve. Melt the siftings in the glycerine and water by heat, add the carbolic acid, and perfume.

Solid Glycerine

French gelatin	ʒij.
Glycerine	ʒiss.
Water	ʒss.
Otto of rose	♏j.

Mix the glycerine, water, and gelatin, macerate for an hour; then dissolve by the heat of a water-bath; perfume and pour into moulds of paraffin or wax paper.

Solid glycerine makes a nice elastic pencil. It should be retailed in the original moulds with some stiff fancy covering or in boxes with movable bottom. To be used after washing and before drying the hands.

Arnica Jelly

Starch	ʒiv. ℈ij.
Glycerine	ʒiv.
Water	ʒj.

Mix and heat until the starch tumefies; while still warm add

Tincture of arnica	ʒss.

so that a uniform jelly may be formed. Put up in wide-mouthed bottles. The tincture may be coloured with cochineal or saffron (1 in 20), macerated for a day or two previous to using.

LIP-SALVES

I

White wax	ʒiss.
Almond oil	ʒiij.
Carmine	gr. vj.
Otto of rose	♏vj.

Melt the oil and wax together. Dissolve the carmine in just enough solution of ammonia, put in a warm mortar, and add the basis; stir constantly until it sets, adding the otto towards the end of the process.

May be cast into sticks before setting. This is the French form.

II

Benzoated olive oil	ʒxvj.
White wax	ʒviij.
Spermaceti	ʒj.
Alkannin	gr. xv.
Cinnamein	ʒj.
Oil of jasmine	ʒiss.
Otto of rose	♏v.

Melt the wax and spermaceti in the olive oil by heat; dissolve the alkannin in about ½ oz. of this mixture in a test-tube and add to the rest. Stir constantly, adding the perfumes last.

III

Almond oil	ʒv.
White wax	ʒiij.
Spermaceti	ʒss.
Alkanet-root	ʒiij.

Digest for a few hours on a water-bath, then strain and add

Oil of bergamot	ʒss.
Oil of lemon	ʒss.
Jasmine pomade	ʒij.
Salicylic acid	℈ij.

Stir until it sets.

IV

Ol. amygd. dulc.	ʒviij.
Ceræ albæ	ʒij.
Cetacei	ʒj.
Rad. anchusæ	ʒvj.
Ol. macidis express. (must be fresh)	ʒiv.
Otto rosæ	ʒss.

Melt the first three ingredients and the oil of mace and add the alkanet-root. Continue the heat until the alkanet-root is thoroughly exhausted—that is, when a good dark colour is obtained; then strain and, when nearly cold, add the otto.

This is a splendid preparation, as it does not become rancid or lose its colour. It is the formula of a famous London West-end house.

Coral Stick

Hard paraffin	ʒvj.
Cocoa butter	ʒvj.
White vaseline	ʒij.
Eosin	gr. j.
Otto of rose	gtt. v.

Melt the first three together by heat. Dissolve the eosin in ½ dr. of spirit and add it and the otto to the mixture. Then cast the salve into sticks.

White Stick

White vaseline	ʒiv.
Hard paraffin	ʒiss.
Benzoic acid	ʒss.
Coumarin	gr. j.
Vanillin	gr. ij.
Heliotropin	gr. ss.
Otto of rose	♏v.

Prepare in a similar manner to the coral stick.

Glycerine Lip-salve

Glycerine cream (No. 1, p. 9) ʒiv.
Boric acid ʒss.
Solution of carmine, a sufficiency to colour.

Mix well.

Vaseline Lip-salve

White vaseline	ʒiv.
White wax	ʒij.
Carmine	gr. viij.
Otto of rose	♏x.

Proceed as in No. 1.

An excellent Colour for Lip-salve is safranine, an azo-colour, occurring in reddish crystals, easily soluble in water and alcohol and affording a brilliant red solution. The colour is pretty and permanent. For colouring salves and pomades use safranine ʒj., S.V.R. ℥iij., water to ℥xij.

CAMPHOR BALL AND ICE

Ball

I

White wax	℥ij.
Almond oil	ʒx.
Spermaceti	ʒviij.

Melt together and add

Flowers of camphor	ʒvj.

Keep in a covered vessel and stir occasionally until about to set, then pour into boxes.

II

Spermaceti	ʒiv.
White wax	℥xij.
Oil of almonds	ʒv.
Flowers of camphor	℥iv.

Prepare like No. I. This is Martindale's formula.

III

Lard	ʒviij.
Almond oil	℥viij.
White wax	ʒviij.
Spermaceti	℥vj.
Flowers of camphor	ʒvj.

Prepare like No. I.

IV

White vaseline	ʒiij.
Paraffin wax	℥iij.
Lard	ʒj.
Flowers of camphor	ʒj.

Prepare like No. I.

V

Ceræ albæ	ʒiv.
Cetacei	℥iij.
Ol. ricini	ʒvj.
Pulv. camphoræ	ʒj.
Glycerini	ʒiv.
Ol. pimentæ	ʒj.

Melt the wax and spermaceti on a water-bath, add the castor oil, then the camphor. Pour into a warm (but not hot) mortar, beat in the glycerine until smooth, and add the essential oil.

The first three are the best quality, and the fourth is suitable for penny and twopenny boxes.

Ice

I

White vaseline	ʒviij.
Hard paraffin	℥v.
Camphor flowers	ʒij.

Prepare in the same way as camphor ball, stirring frequently, but cast into oblong flat pieces, which should be wrapped in paraffined paper.

II

Spermaceti	ʒiv.
White wax	ʒviij.
Almond oil	℥xvj.

Melt and add

Flowers of camphor	ʒiv.

Dissolve and add

Oil of bitter almonds	ʒss.
Expressed oil of mace	ʒij.

Stir well, and when about to set pour into suitable moulds standing in a dish of cold water so as to cool quickly.

III

Camphor	℥iij.
Benzoated lard	℥xv.
White wax	℥x.
Spermaceti	ʒiv.
Rectified spirit	a sufficiency

Triturate the camphor with enough spirit to dissolve it. Melt the wax and spermaceti on a water-bath and add the camphor solution. Continue to stir until the spirit has evaporated, then remove from the water-bath, add the lard, stir, and pour into moulds.

Of these ices we prefer the first, which is an excellent, cheap, and quickly made article that looks well and sells at sight. Nos. II. and III. are American, the latter being a good example of 'how not to do it,' as the spirit is pure waste, except to powder the camphor. Another formula we caution retailers to give a wide berth. It orders mutton suet 16 parts, spermaceti and wax of each 1 part, and camphor 2 parts. The objection to this is the sheepy odour, which is extremely persistent.

For other preservatives and preparations for the hands, *see* the section on 'Manicure.'

VIOLET POWDER

I

Powdered starch	lb. vj.
Powdered orris	lb. j.
Oil of bergamot	ʒij.
Oil of neroli	ɱx.

Mix and sift three times.

II

Starch powder	lb. j.
Orris powder	lb. j.
French chalk	lb. iv.
Oil of bergamot	ʒj.
Oil of lemon	ʒj.
Oil of cloves	ɱxv.
Oil of neroli	ɱxv.

Mix.

III

Starch, in fine powder	ʒxvj.
Powdered orris-root	ʒvj.
Otto of rose	ɱiij.
Oil of origanum	ɱiij.

Mix.

IV

Powdered orris-root	ʒiv.
Starch, in fine powder	lb. iv.
Otto of rose	ɱxij.
Essence of musk	ʒss.
Oil of bergamot	ɱvj.

Mix.

The powder ingredients in the subjoined nursery-powders may also be used with any of the following Perfumes:—

I

Powdered orris-root	ʒxvj.
Grain musk	ʒj.
Oil of bergamot	ʒiv.
Oil of lemon	ʒij.
Jasmine extrait	ʒij.
Oil of cloves	ʒss.
Oil of neroli	ʒj.

Mix well.

II

Oil of bergamot	ʒv.
Oil of lemon	ʒv.
Oil of cloves	ʒiiss.
Oil of neroli	ʒiiss.

Mix well.

III

Oil of bergamot	ʒvij.
Oil of neroli	ɱxx.
Oil of cloves	ɱxx.
Otto of rose	ɱxx.
Essence of musk	ɱxl.

Mix.

Use ʒj. of the first and ʒj. of the others to the pound of powder (equal parts of starch and orris powder).

Ionone also makes a good perfume.

Nursery-powders

I

Boric acid	ʒiss.
Powdered French chalk	ʒiij.
Starch powder	ʒxij.
Perfume	a sufficiency

Triturate the French chalk with the perfume, then add the boric acid and starch and thoroughly mix them.

II

Fullers' earth	ʒix.
Boric acid	ʒiss.
Zinc oxide	ʒiij.
Starch	ʒix.
Orris-root	ʒiss.
Oil of bergamot	ʒij.

Mix the powders thoroughly, add the oil, and pass through a fine sieve.

III

Zinc oxide	ʒss.
Powdered starch	ʒiss.
Boric acid	gr. xx.
Eucalyptus oil	ɱx.

Mix and rub well in a mortar before sifting.

IV

Powdered French chalk	ʒviij.
Fullers' earth	ʒiv.
Lycopodium	ʒiv.
Otto of rose	ɱv.

Rub the otto of rose with the fullers' earth in a mortar until thoroughly incorporated, add the chalk and lycopodium, triturate thoroughly, and sift.

Soluble Nursery and Toilet Powders are made with pulv. acid. boric., perfumed and coloured as desired.

FACE-POWDERS

These preparations are now regarded as a necessary adjunct to 'my lady's toilet.' They protect the face after washing, especially on cold or very dry days. Face-powder acts partly as an absorbent and partly by protecting the skin, and prevents in a measure chapping or roughness. The belief entertained by many that face-powder exercises a peculiar beautifying effect on the skin, causing the removal or disappearance of blemishes by absorption or otherwise, is perhaps not wholly without foundation, although this power is probably greatly overrated. Among the constituents of face-powders which are supposed to exercise some medicinal or curative effect are zinc oxide and the basic salts of bismuth, chiefly the oxychloride. Zinc oxide has a slight physiological action on the skin: it is a mild astringent, and exercises a curative effect on cutaneous eruptions and on excoriated surfaces. It also possesses the property of imparting adhesiveness to powders containing it. Rice starch or flour is the best base for face-powders, owing to the small size of the starch granules. Starch powders absorb moisture

from the skin and expand, and the large-sized starches are prone to produce enlarged pores. 'Poudre de Riz' is now used as a generic term for any kind of face-powder. A specially prepared calcium phosphate precipitated as finely as possible is also the base for a much-advertised preparation. The ordinary commercial calc. phosph. præcip. is not suitable for face-powders. Eosine or phloxine gives the best 'pink' face-powder. Talcum powders have an enormous sale in the United States, and are excellent for use in a hot, sticky climate. Ten per cent. of boric acid is usually added, but this is not a universally necessary addition, as boric acid has a very drying effect on the skin, especially on that of infants, and many obscure eczematous eruptions have been traced to the too frequent use of boric acid as a toilet-powder. Finely bolted Italian talc is the best for toilet-powders.

The following formulas are regarded as fairly representative of the composition of popular face-powders :—

		Parts
A.	Orris-root	1
	Zinc oxide	2
	French chalk	2
B.	Precipitated chalk	2
	French chalk	3
C.	Bismuth oxychloride	1
	Precipitated chalk	3
	French chalk	5
D.	Bismuth subcarbonate	1
	Zinc oxide	3
	French chalk	4
	Precipitated chalk	4
	Cornflour	5
E.	Bismuth subnitrate	1
	French chalk	25
	Cornflour	35
	Terra alba (kaolin)	40
F.	Bismuth subcarbonate	1
	Zinc oxide	3
	Magnesium carbonate	3
	French chalk	5
G.	Zinc oxide	1
	French chalk	3
H.	French chalk	4
	Zinc oxide	1
	Starch	1

Formulas A, B, and E represent the cheaper powders, like Swan Down, &c., though they do not differ very much from some of the better powders. Formulas C, D, and F represent the better grades of face-powders, as seen in the case of Pozzoni's, Saunders's, and others. Formula H is modelled on Pinaud's and Rimmel's.

Pink and brunette powders can be obtained from the foregoing formulas by using carmine for the pink, and fine quality of levigated burnt umber, burnt sienna, &c., or very small amounts of Armenian bole, for the brunette. Perfume, as

being the most expensive part of face-powders, should be judiciously chosen. Artificial perfumes, such as violet, are good for the purpose. The powder should be sifted again and again through a No. 120 sieve until a high degree of admixture is obtained.

All the solids used in making face-powders must be reduced to the finest possible condition by repeated sifting or elutriation. Colouring-matters should be triturated for a long time with a small proportion of the basis ; so also the perfume, before adding to the bulk and sifting.

Toilet-powder papers are now much in vogue, especially as a portable means for imparting a refreshed appearance to the face when the usual toilet accessories are not available. These papers are made from fine Japanese tissue paper into which suitable face-powders are rubbed by means of a brush, superfluous powder shaken off, and the paper cut into suitable sizes.

White

I

Venetian talc	ʒxvj.
Bismuth subnitrate (or oxychloride)	ʒj.
Zinc oxide	ʒj.
Perfume	a sufficiency

Mix.

II

French chalk	ʒviij.
Zinc oxide	ʒvij.
Powdered orris	ʒiij.
Ionone	ɱx.

Mix.

III

Precipitated chalk	ʒiv.
French chalk	ʒiv.
Starch powder	ʒv.
Bismuth subcarbonate	ʒj.
Zinc oxide	ʒiij.
Oil of ylang-ylang	ɱxij.

Mix.

IV

Zinc oxide	ʒvij.
Venetian talc	ʒxij.
Magnesium carbonate	ʒiss.
Oils for Millefleurs	ʒss.

Mix.

Parisian

I

'Crown' zinc-white	ʒiv.
French chalk	ʒiv.
Magnesium carbonate	ʒiv.
Otto of rose	ɱxv.

Mix.

II

Rice flour	lb. x.
Sodium carbonate, dried	ʒiv.
Powdered borax	ʒiv.
Perfume	a sufficiency

Mix.

Pasma

French chalk, Rice flour	of each equal parts
Perfume	a sufficiency

Mix.

La Blanche Face-powder

Oxide of zinc	ʒiv.
Rice powder	ʒxiv.
Precipitated chalk	ʒiv.
Purified talc	ʒij.
Orris powder	ʒij.
Perfume	a sufficiency

Mix well and pass through a fine sieve.

Lily White Tablet

French chalk	ʒvj.
Prepared chalk	ʒiv.
Ess. of lily of the valley	ʒiij.
Starch mucilage	a sufficiency

Make into a stiff paste, form into tablets, and dry carefully.

Rose Tablet

French chalk	ʒxvj.
Carmine	ʒj.
Gum arabic	ʒj.

Mix in a mortar by prolonged trituration, then add water to form a doughy mass, and fill into shallow porcelain dishes.

Pink Powder

I

French chalk	ʒxvj.
Precipitated chalk	ʒxvj.
Oxide of zinc	ʒviij.
Carmine	ʒij.
	(or a sufficiency)
Otto of rose	♏x.

Rub the carmine and otto with about 2 oz. of French chalk, damp with rectified spirit ʒss. to facilitate rapid and complete division of carmine. Triturate until the carmine is thoroughly mixed, add the other powders, and finally sift thrice.

II

(After Bloom of Ninon)

Oxide of zinc	ʒj.
Starch	ʒviij.
Carmine	a sufficiency
Otto of rose	♏v.

Prepare like No. I.

III

White powder No. IV.	ʒxvj.
Solution of carmine in ammonia	a sufficiency

Mix well.

Rose

Powdered starch	ʒxvj.
Rose-pink	ʒss.–ʒj.
Otto of rose	♏xv.
Oil of neroli	♏v.

Triturate well and sift.

Blonde

I

Pink powder No. III.	ʒij.
Yellow ochre	gr. x.

Mix.

II

White powder No. IV.	ʒij.
Tincture of saffron	♏x.

Mix.

Imitation of Swan Down

Oxide of zinc	ʒviij.
Orris powder	ʒiiss.
French chalk	ʒx.
Essence of musk	♏x.
Jasmine extrait	ʒj.
White rose extrait	ʒj.
Cassie extrait	ʒj.

Mix thoroughly, allow to stand in the air a short time, and pass through a fine sieve.

FACE POWDER,

OR

POUDRE DE BEAUTÉ

For preserving and beautifying the complexion, and imparting to it a clear and healthy appearance, without in any way injuring the skin.

DIRECTIONS.—After washing, carefully dry the skin and apply the powder with a puff.

Skin Colour

Bismuth oxychloride	ʒiiss.
French chalk	ʒx.
Starch	ʒij.
Calamine	ʒij.
Oil of ylang-ylang	ɱij.

Mix.

Diaphane Powder

(*Sarah Bernhardt's*)

Whitest Venetian talc	ʒij.
Rice flour	ʒij.
Zinc white	ʒj.

Mix and perfume with a sufficiency of the following :—

Oil of bergamot	ɱXLV.
Oil of ylang-ylang	ʒss.
Oil of neroli	ʒss.
Eau de Cologne	ʒv.

The Rose-tinted Powder is coloured with ammoniacal solution of carmine and perfumed with a mixture of

Oil of bergamot	ɱXLV.
Otto of rose	ʒss.
Oil of cinnamon	ɱviij.
Essence of musk	ɱviij.
Essence of white rose	ʒv.

The Yellow-tinted Powder is coloured with cadmium yellow, or, better, with yellow ochre and a trace of carmine, the perfume being a mixture of

Oil of bergamot	ɱXLV.
Oil of cloves	ɱxv.
Oil of cedar-wood	ɱxv.
Oil of patchouli	ɱxv
Essence of new-mown hay	ʒv.

Langtry Invisible

Zinc oxide	ʒxvj.
Precipitated chalk	lb. vj.
French chalk	ʒxvj.
Starch	lb. ij.
Ext. white rose	ʒj.
Ext. jasmine	ʒj.
Ext. orange-blossoms	ʒj.
Ext. cassie	ʒj.
Essence of musk	ʒss.

Mix well and sift three times.

Pistachio Toilet-powder

Pistachio flour (free from oil)	ʒxvj.
French chalk	ʒxvj.
Oil of lavender	ʒss.
Otto of rose	ʒss.
Oil of cinnamon	ɱvj.

Mix.

A New York complexion specialist, whose articles, at high prices, have obtained considerable vogue, uses the following prescriptions :—

Face-powder Base

White talc	8 lbs.
Fine kaolin	4 lbs.

Mix.

Flesh Face-powder

Base	9 lbs.
Powdered Florentine orris	1 lb.
Carmine No. 40	250 gr.
Extract of jasmin	100 mins.
Oil of neroli	20 mins.
Vanillin	5 gr.
Artificial musk	30 gr.
White heliotropin	30 gr.
Coumarin	1 gr.

Rub the carmine with a portion of the base and alcohol in a mortar, mixing the perfume the same way in another large mortar and adding the orris. Mix and sift all until specks of carmine disappear on rubbing.

Brunette or Rachelle

Base	9 lbs.
Powdered Florentine orris	1 lb.

Perfume the same.

Powdered yellow ochre	3 oz. 120 gr. (av.)
Carmine No. 40	60 gr.

Rub down the carmine and ochre

with alcohol in a mortar, and spread on glass to dry; then mix and sift.

White Face-powder

Base	9 lbs.
Powdered Florentine orris	1 lb.

Perfume the same.

Mix and sift.

Liquid Rouge (Peach-tint)

Solution No. 1

Buffalo eosine	ʒiv.
Distilled water	ʒxvj.

Mix.

Acid Solution No. 2

Pure hydrochloric acid	ʒiiss.
Distilled water	ʒlxiv.

Mix.

Pour No. 1 solution into No. 2, shake, and set aside for a few hours; then pour off the clear portion and collect the precipitate on a filter. Wash with the same amount of No. 2, and immediately throw the precipitate into a glass measure, stirring in with a glass rod sufficient of No. 2 to measure 16 oz. in all. Pass through a hair sieve to get out any filtering-paper. To every 16 oz. add 8 oz. of glycerine.

For day use eosin 1 gr. to 3 oz., and for artificial light 1 gr. to 1 oz., are the usual proportions.

Face-bleach or Beautifier

Syrupy lactic acid	40 oz.
Glycerine	80 oz.
Distilled water to	5 gals. (U.S.)

Mix, gradually add

Tincture of benzoin	3 oz.

Colour by adding

Carmine No. 40	40 gr.
Glycerine	1 oz.
Ammonia solution	½ oz.
Water to	3 oz.

Heat this to drive off the ammonia, and mix all. Shake, set aside; then filter, and add

Solution of ionone	1 dr.

Add a few drachms of kaolin and filter until bright.

Toilet Talcum

(Borated Apple-blossom)

Powdered talc	22 lbs.
Magnesium carbonate	2¾ lbs.
Powdered boric acid	1 lb.

Mix.

Perfume

Carnation pink blossom	2 oz.
Ext. of trefle	2 dr.

To 12 dr. of this mixture add

Neroli	1 dr.
Vanillin	½ dr.
Alcohol to	3 oz.

Sufficient for 25 lbs.

Poudre de Riz

Starch powder	ʒviij.
Rice flour	ʒij.
French chalk	ʒj.
Orris powder	ʒj.
Cassie extrait	ʒiss.
Jasmine extrait	ʒj.

Mix well.

Any other perfume may be used.

Toilet-powder Perfume

Essence of musk	ʒiij.
Oils for Millefleurs	ʒiij.
Otto of rose	ɱxv.
Tincture of orris	ʒj.
Tincture of benzoin	ʒiiss.

Mix.

This is suitable for many powders, and the oils may be increased.

Liquid Face-powder usually consists of zinc oxide with a little glycerine and rose-water. For the *White*, zinc oxide alone is used, calamine or ferric oxide is added for *Flesh* or *Rachel*, and erythrosin or phloxine for *Pink*.

FACE-PAINTS

Bloom of Roses

I

Carmin. pur. . . . ℥ss.
Liq. potassæ . . . ʒvj.

M. et adde

Ess. rosæ alb. . . . ℥iij.
Aq. ad . . . . ℥xx.

Set aside for a few days, agitate occasionally, and filter.

II

Carmine . . . . ʒij.
Solution of ammonia a sufficiency

Dissolve the carmine in just enough of the solution, then add

Rose-water to . . . ℥xvj.

Set aside for a few days and decant or filter.

Either of these may be retailed as Liquid Rouge.

BLOOM OF ROSES

FOR

Beautifying the Complexion.

Apply with a camel-hair brush and dab lightly with a soft cloth.

Pearl White

Bismuth subcarbonate . ℥viij.
Rose-water . . . ℥xvj.
Orange-flower water . . ℥xvj.

The subcarbonate should be freshly precipitated by pouring 6 oz. of subnitrate dissolved in nitric acid into 10 gallons of water containing 1 lb. of carbonate of sodium; wash the precipitate by decantation, drain, add the orange-flower water, and make up to 36 oz. with rose-water and a sufficiency of spirit of rose to compensate for the deficiency of odour. This provides a fine tint.

Blanc de Perle

Hydroxide of zinc . . ℥iij.
Oxychloride of bismuth . ʒij.
Essence of white rose . . ʒj.
Glycerine . . . . ℥ss.
Distilled water to . . ℥vj.

Mix.

White Rose

Bismuth. oxychloridi . . ℥x.
Cretæ gallic. . . . ℥v.
Cretæ præpar. . . . ʒij.
Glycerini . . . . ʒij.
Aquæ . . . . ℥xxiv.
Ess. rosæ . . . . q.s.

Mix and sift the powders thoroughly, triturate with the glycerine and water, then add the perfume. Put up in 2-oz. blue-glass squares, labelled as follows:—

WHITE ROSE FACE PAINT.

WARRANTED HARMLESS.

(*Name and Address.*)

Kaloderm

Wheaten flour . . . ℥xv.
Almond meal . . . ℥iv.
Orris powder . . . ℥iv.
Spirit of rose . . . ℥iv.
Glycerine . . . . ℥iss.

Make into a paste, which is to be thinned with water before use, then painted on the skin.

Aurora Blush

Erythrosin	ʒss.
Glycerine	ʒiss.
Spirit of rose	Oiss.
Rose-water	Oiiiss.

Dissolve the erythrosin in the water, add the glycerine and perfume, and filter.

This is for colouring the cheeks and lips.

Theatrical Face-paints

Black
(Nigger-black)

Drop black	ʒij.
Almond oil	ʒij.
Cocoanut oil	ʒvj.
Oil of lemon	ɱv.
Oil of neroli	ɱj.

Mix.

The best drop black for this formula is made by burning camphor on a plate and inverting a basin over it to catch the soot.

White

Oxide of zinc	ʒj.
Subnitrate of bismuth	ʒj.
Hydroxide of alumina	ʒj.
Camphor	gr. xij.
Oil of peppermint	ɱx.
Ess. bouquet	ʒj.
Almond oil	a sufficiency

Make a paste.

Bright Red

Oxide of zinc	ʒiiss.
Subnitrate of bismuth	ʒiiss.
Hydroxide of alumina	ʒiiss.
Eosin	gr. v.
Ess. bouquet	ʒij.
Camphor	gr. xxiv.
Oil of peppermint	ɱxx.
Almond oil	a sufficiency

Dissolve the eosin in the ess. bouquet and mix with the camphor and peppermint; add to the powders, and make into a paste with almond oil.

Deep Bordeaux Red

Oxide of zinc	ʒij.
Subnitrate of bismuth	ʒij.
Hydroxide of alumina	ʒij.
Carmine	ʒss.
Solution of ammonia	ʒiss.
Camphor	gr. xij.
Oil of peppermint	ɱx.
Ess. bouquet	ʒiss.
Almond oil	a sufficiency

Dissolve the carmine in the ammonia, and proceed as for bright red.

Skin Colour

Precipitated chalk	ʒiiss.
Oxide of zinc	ʒiiss.
Vermilion	ʒj. (or q.s.)
Powdered orris	ʒv.
Tincture of saffron	ʒij.
Camphor	℈j.
Oil of peppermint	ɱxv.
Ess. bouquet	ʒiss.
Almond oil	a sufficiency

Make a paste.

Theatrical face-paints are sold in sticks, and there are many varieties of colours. Yellows are obtained with golden ochre, browns with burnt umber of the finest quality, and blue is made with ultramarine. These colours should in each case be levigated finely along with their own weight of equal parts of precipitated chalk and oxide of zinc and diluted with the same to the tint required, then made into sticks with mutton suet (or vaseline and hard paraffin equal parts), well perfumed.

The foregoing primary colours afford sufficient scope for blending.

Red Powder

Powdered talc	ʒj.
Carmine	gr. x.
Solution of ammonia	ʒss.

Dissolve the carmine in the ammonia, mix with a portion of the talc, and this with the remainder, and dry by exposure to the air.

White Powder

Powdered Venetian talc	ʒiij.
Bismuth oxychloride	ʒss.
Carmine	gr. ss.
Oil of neroli	a sufficiency

Mix.

Theatre Rouge (American)

Base

Corn starch	ʒiv.
Powdered white talc	ʒvj.

Mix.

I

Carminolin (Kohnstamm's)	gr. x.
Base	ʒvj.
Water	ʒiv.

Dissolve the carminolin in the water, mix with the base, and dry.

II

Geranium red	gr. x.
Base	ʒvj.
Water	ʒiv.

Mix as above, and dry.

No. 18 Rouge de Théâtre

Carminolin rouge No. I.	ʒj.
Geranium rouge No. II.	ʒiij.

Mix in a mortar to a paste with water, and mould or stamp out. Set aside to dry.

Fatty Face-powders have a small percentage of fat mixed with them in order to make the powder adhere to the skin. The subjoined formula for Lanoline Toilet-powder is good and workable, and fairly typifies the manner in which any powder may be made 'fatty.' It is theatrical people who generally require this class of powder, and they have a preference for certain brands. An English patent was granted in 1889 (No. 4643) for lanoline toilet-powders, but it did not include the use of ether (claimed in a prior patent—No. 14233 of 1888), which is a great improvement. Both patents have expired.

Anhydrous lanoline	ʒj.
Magnesium carbonate (light)	ʒiij.
Ether	ʒiv.

Put the lanoline in a mortar and dissolve in the ether, add the magnesia, and mix well. Dry and add the following.

French chalk	ʒij.
Starch powder	ʒiss.
Boric acid	ʒj.
Perfume	a sufficiency

Mix well.

A good perfume is

Coumarin	gr. ij.
Otto of rose	♏ij.

CARE OF THE HANDS AND FEET

For toilet considerations the hands and feet are secondary to the face only on account of the general association of beauty with the features. Much comfort depends upon strict hygienic conditions, and it is to maintain these or correct the results of indiscretions that the retailer is often asked for something. It is beyond the object of this manual to discuss the hygiene of the skin; but the subject is one of importance, and we advise those directly interested in it to read about the skin and its functions in any work on physiology; see also Startin's 'Care of the Skin and Hair' (J. Wright & Co., *2s. 6d.*), a popular but suggestive book.

Glycerine Preparations for the Hands.—Glycerine is a hygroscopic substance; so when it is applied in the undiluted state to the skin it produces intense smarting because it draws moisture from the tissues. On this account glycerine alone does a deal of harm when used for chapped hands. The following is a selection of formulas for chapped-skin remedies which depend in a great measure for their healing and soothing effect upon glycerine :—

Glycerine and Rose-water

I

Glycerine	ʒv.
Liquid cochineal	♏xij.
Rose-water to	Oj.

Mix.

II

Glycerine	ʒv.
Orange-flower water	ʒij.
Rose-water	ʒv.
Distilled water	ʒviij.

Mix.

Borated Glycerine Lotion

Glycerini boracis	ʒj.
Glycerini puri	ʒij.
Aq. rosæ ad	ʒviij.

M.

Boro-glycerine Cream

Boric acid	ʒj.
Glycerine	ʒvj.

Dissolve by heat and mix with

Lanoline	ʒvj.
Vaseline	ʒj.

Add any perfume desired. The borated glycerine should be cooled before mixing with the lanoline.

Benzoated Glycerine

Benzoic acid	℈j.
Tincture of Tonka	ʒij.
Soft soap	ʒj.
Glycerine	ʒj.
Rose-water to	ʒiv.

Dissolve the acid in the tincture and add to the glycerine. Triturate

the soap with an ounce of water, mix this with the acid, &c., and make up to 4 oz. with rose-water.

Camphorated Glycerine

Spt. camphoræ (1 in 10) .	℥j.
Glycerini . . .	℥iij.

M.

A valuable application for chapped hands.

Glycerine and Camphor Cream

(*See* Winter Cream, p. 12.)

Menthol Cream

Menthol. . . .	℈ss.
Salol	ʒss.
Glycerine . . .	ʒiij.
Lanoline . . .	ʒvj.
Vaseline. . . .	ʒvj.

Melt the vaseline and dissolve the menthol in it. In a warm mortar rub the salol and glycerine together, and add the vaseline and lanoline, stirring well to make a creamy ointment.

Bay Rum Glycerine Lotion

Bay rum	℥viij.
Glycerine . . .	℥viij.
Quince mucilage . .	℥xvj.

Make the mucilage by roughly bruising 1 oz. of quince-seeds and boiling in 32 oz. of water until reduced to 16 oz. Strain through a cotton cloth, with pressure, into a mortar, and add first the glycerine, then the bay rum, and any spirituous perfume desired.

This is a nice preparation : it has a softening effect upon the skin, is not sticky like a gum, nor greasy like an ointment.

Glycero-lanoline

Tincture of benzoin. .	ʒi.
Glycerine . . .	℥i.
Lanoline . . .	℥vj.

Mix.

Hand-tablet

Vaseline. . . .	℥xvj.
Hard paraffin . . .	℥iv.

Melt, stir until creamy, and add the following filtered solution :—

Peruvian balsam . .	ʒij.
Oil of citronella . .	♏xij.
Oil of mirbane . .	♏v.
Rectified spirit . .	℥ss.

Pour into a tray to the depth of $\frac{7}{8}$ inch, and when cold cut with a punch into pieces $1\frac{1}{4}$ inch in diameter.

Retails in chip box at 1*d.*

Preparations which contain fatty matters should only be used at bedtime, or by those who have much housework to do. They are protective as well as healing in character, and generally make the skin feel soft and pliable. The directions in all cases should simply be to apply after washing and well drying the hands, and to wipe off the superfluous cream or lotion with a soft towel.

Manicure Preparations. — 'Manicure' we owe to Americans, the most cultured of whom devote a large share of their toilet to trimming the nails, polishing them, removing skin callosities, and otherwise endeavouring to give the hands

a refined appearance. The following are some of the principal materials and preparations required in addition to implements :

Finger-nail Polishes or Manicure Powder

I

Putty powder . . . ℥viij.
Carmine. . . . ℈j.
Otto of rose . . . ♏vj.
Oil of neroli . . . ♏v.

Triturate well together.

II

Oleate of tin (in powder). ℥ij.
Powdered pumice . . ℥iss.
Oil of lavender . . ♏v.

Mix well by trituration, and sift three times through a No. 120 sieve.

III

Cinnabar . . . ℥j.
(or kieselguhr ℥j.)
Fine emery powder . ℥j.
Essential oil of almonds . ♏ij.

Triturate until uniformly mixed, and sift two or three times.

IV

Putty powder . . . ℥iv.
Liquid cochineal . . ℥j.
Bay rum glycerine lotion a sufficiency to make a smooth and soft paste.

The powder polishes are preferred, and sodium perborate ℥ss. to ℥j. per ounce is a useful addition. They should be put up in bottles with a sprinkler stopper, so as to enable the powder to be placed easily on the chamois polisher.

The first step in beautifying the nails is to lather well in warm water with a good pure soap. When dry, and while soft, trim the points with scissors and smooth with pumice or the file. Push the skin all round the edges to show the shape of the nails and the half-moon at the base. Ragged bits of skin should be removed, then the polishing-powder used, rubbing equally all over. Finally a varnish may be applied, but it generally suffices to touch the nails with a little toilet lanoline or similar cream.

Nail-varnish

Hard paraffin . . . ℥j.
Otto of rose . . . ♏iij.
Chloroform to . . . ℥ij.

Dissolve.

White-spot Remover

Myrrh . . . . ℥j.
Black pitch . . . ℥j.

Melt together and make into a plaster.

Bits of the 'white-spot remover' are to be applied at night, covered with a bandage, and removed in the morning, the adhering plaster being washed off with spirit of turpentine perfumed well with lavender.

Finger-tip Colouring

Alkanet	ʒss.
Rectified spirit . .	ʒxij.
Rose-water . . .	ʒiv.

Macerate for a week, add 10 drops of otto of rose, shake, and filter.

A solution of eosin is also used: it should be made with perfumed spirit.

Polishing-cream

Bismuthi oleatis . .	℥ij.
Lanolini	℥vj.
Ol. amygdalæ . . .	℥ij.

Mix well and perfume.

Nail-bleach

I

Acid. sulphuric. dil. .	℥ij.
Tr. myrrhæ . . .	℥j.
Aq. lavand. . . .	ʒiij.
Aq. ad	ʒiv.

M.

To whiten the nails, dip the tips of the fingers in the lotion after washing, dry, and polish with chamois.

II

Acid. tartaric . . .	℥j.
Tr. myrrhæ . . .	℥j.
Aq. coloniensis . .	℥ij.
Aq. destillat. . . .	ʒiij.

M.

Whitening the Hands is one of the principal features of manicure as practised at home. The more common articles required are subjoined. Chemists are often asked for 'something to whiten ladies' hands.' Looking at the matter in an unsophisticated way the request seems a trifle ridiculous, for 'ladies' consider that white hands, naturally so, are the mark of breeding and all that implies their ladyhood. Once the hands begin to dip into the various kinds of housework, which implies wetting them, the skin loses its natural softness and becomes red, if the worker does not immediately thereafter wash and brush the hands thoroughly with soap and warm water, drying with a well-warmed and clean towel. At this point some skin-lotion may be applied. Well-diluted glycerine (1 in 8) usually suffices, a teaspoonful or so being rubbed all over the hands, which are then dried with the towel, but if the skin has a tendency to harden a creamy lotion is preferable. Housemaids should use something of the cerate type on the backs of the hands (*see* next page).

Lemon Soap

Curd soap	ʒvj.
Eau de Cologne . .	℥ij.
Lemon-juice . . .	℥ij.

Shred the soap finely and place in a suitable dish with the eau de Cologne and lemon-juice. Warm gently until a uniform fluid is obtained, and pour into moulds. When it sets put in a warm place. A little eau de Cologne may be sprinkled over it for the first day or two. This preparation is to be used as a toilet soap. It looks most unreasonable and unscientific, but we have found it to go all right.

Hand-bleach

Zinc. oxidi	ʒj.
Bismuthi subnit.	ʒss.
Ol. amygdalæ	ʒiij.
Lanolini anhydros.	ʒj.
Glycerini	ʒj.
Spt. camphoræ	ʒj.
Aquæ rosæ	ʒiij.
Otto rosæ	ɱiij.

M.S.A.

This salve is to be rubbed well over the hands at night. After washing in warm water, dry the hands thoroughly with a warm towel and apply a little of the ointment to the back of the hands, especially at the wrists and over the knuckles. Rub off the ointment with the towel.

Hand-cleaner.

Sifted kaolin	ʒv.
Powdered Castile soap	℥iv.
Powdered pumice	ʒiij.
Sodium perborate	℥ij.
Coumarin	gr. xv.

Mix by sifting twice.

To be put up in bottle sifters as a lavatory adjunct.

Hand-tablets

Curd soap	ʒj.
Hot water	ʒj.
Borax	ʒss.
Anhydrous wool-fat	ʒij.
Powdered camphor	ʒss.
Oil of rose-geranium	ɱiv.

To be moulded into cakes.

Scotch Oatmeal

Medium oatmeal	lb. j.
Perfume essence	ʒj.

Sprinkle the perfume over the meal, and put up in bag or bottle.

Purified Bran

Bran	℥xv.
Powdered orris	ʒj.
Essence of violet	ʒj.

(or ionone ɱx.)

Mix and pack suitably.

Almond Meal

I

Farinæ tritici	ʒv.
Pulv. iridis	ʒij.
Pulv. sapon. alb.	ʒij.
Pulv. boracis	ʒij.
Ol. amygdal.	ʒij.
Spt. vini rect.	ʒij.
Ol. amygd. amar.	ɱij.
Ext. millefleur	q.s.

M.

II

Oatmeal	lb. iv.
Wheatmeal	lb. j.
Almond oil	℥iij.

Mix and add

Powdered borax	ʒiij.
Powdered orris	℥iij.
Oil of lemon	ʒiij.
Oil of verbena	ɱxx.
Oil of bitter almonds	ɱxv.

Mix.

Cosmetic Pastes and Creams are for applying at bedtime to make the hands white. They are either rubbed directly upon the hands, which are then covered with a pair of gloves to be worn all night, or a pair of gloves several sizes too large are opened and one or other of the following preparations rubbed on the inside of the leather. The gloves are then put on the hands and secured.

I

Oil of almonds	ʒiij.
Tincture of benzoin	ʒj.
Glycerine	ʒij.
Rice flour	ʒij.
Rose-water	ʒj.

Yolks of two eggs.

Emulsify by beating well together.

This requires the addition of some perfume, such as ylang-ylang.

II

Yellow wax	ʒij.
Myrrh	ʒj.

Melt together, decant the clear liquid into a warm mortar, and add

Honey	ʒiv.
Spirit of rose	ʒvj.

Glycerine, a sufficiency to make a smooth paste which will spread easily.

Removal of Warts.—Warts are thickened epidermis in an atrophied condition. They are contagious—that is to say, if a wart bleeds the blood may infect other parts of the skin of the same individual, or may infect other persons; but there is some degree of idiosyncrasy in the matter. There are many cures for them, 'the morning or fasting spittle' being perhaps the most ancient. Another is pipe-clay rubbed in dry two or three times daily, which is said to cure warts in a few weeks. The safest and best escharotic is glacial acetic acid applied morning, noon, and night with a camel-hair pencil. Just touch the wart with the acid: do not saturate. Should soreness result, drop the application for two days, then resume. 'Wart-solvent' is aromatic vinegar coloured with Bismarck brown. Nitric acid is also good, but must be handled with care. The wart should be scraped occasionally. Salicylic collodion is preferred by some. Ten-grain doses of magnesium sulphate taken early in the morning have a good reputation; so has lime-water, taken daily in liberal doses. The treatment must be continued some weeks.

CHILBLAINS

Sir Benjamin Ward Richardson, M.D., considered that those who suffer from chilblains are a distinct class of the community. They are those to whom the old saying 'A cold hand and a warm heart' can most fitly be applied. They have a stiff fight for life, and in life's battle those who are most afflicted are said by Sir Benjamin to have a 'chilblain circulation.' Sir A. E. Wright, M.D., when at Netley Hospital found that the blood of persons liable to chilblains takes about three times longer to coagulate than the normal time (three to four minutes).

This condition obtains in children (whose blood is deficient in calcium, owing to bone-formation), in those liable to nose-bleeding and urticaria, in those of lymphatic habit of body, in persons subject to malarial cachexia, and in those of hæmophilic constitution. He stated that such cases are rapidly cured by the administration of 6 to 30 gr. of calcium chloride three times a day. The cure takes from two to ten days only. Equally efficacious in those cases which are due to poverty of calcium in the blood is calcium lactate in 20 to 60 gr. doses. It is almost tasteless, and Mr. C. S. Ashton (*C. & D.*, 1907, I., 126) gives a practical turn to these observations by issuing a handbill recommending treatment with 20-gr. powders and tincture of tamus communis externally for unbroken chilblains, the wording of the labels being as follows :—

CALCIUM CHILBLAIN POWDERS

As prescribed by Professor Sir A. E. Wright, M.D.

Take one powder after meals three times a day, in a little water or milk, for two days, then miss two days and resume if necessary. Children from ten to fifteen, half a powder ; under ten, a quarter of a powder.

Paint the chilblains night and morning with *Tamus Communis*, unless they are broken, in which case use compound tar ointment.

TAMUS COMMUNIS CHILBLAIN CURE

DR. RUDDOCK writes :— '*Tamus Communis* is an almost infallible cure for unbroken chilblains.'

DIRECTIONS. — Apply night and morning with a camel-hair brush. For broken chilblains use the compound tar ointment.

FOR EXTERNAL USE ONLY.

The *Compound Tar Ointment* referred to is composed of hydrarg. ammon. ʒss., liq. carb. deterg. ʒj., lanolin. ʒij., vaselin. ad ℥j.

Up to the present a 'chilblain-cure' has been regarded as synonymous with 'a liniment,' and it is obvious that since the disorder depends primarily upon constitutional weakness any application can only be in the nature of a relief. Physicians have as curious ideas as other people about treatment, so we find that the very thing which one lauds to the skies is considered a failure by others.

As a general rule it may be taken for granted that tight boots and gloves should be avoided. The feet especially should be kept warm with woollen socks, a dry pair being put on every day. We give a selection of formulas for Chilblain Liniments, most of which have been found useful, and from the variety the retailer will have no difficulty in selecting one or more preparations suitable for specialising.

I

Acidi carbolici	gr. vj.
Lin. belladonnæ	ʒij.
Lin. aconiti	ʒj.
Collodii flexilis	ʒj.

S. et M.

To be painted on the parts affected every night.

II

Tr. iodi	℥ss.
Collodii	℥ss.

M.

To be painted on night and morning.

III

Acidi carbolici	℈ij.
Spt. camphor.	ʒij.
Spt. rectificat.	ʒiv.
Tr. opii	ʒij.
Aq. ad	℥iss.

M.

To be applied on lint at bedtime.

IV. Martindale's

Acidi acetici	ʒj.
Liq. plumbi subacet. fort.	℥ss.
Spirit. camphoræ	℥ss.

M.

Ung. glycer. plumbi subacet., B.P., 'acts like a charm.' Either to be used frequently.

V

Lin. aconiti	℥iij.
Potassii iodidi	ʒij.
Camphor.	ʒj.
Glycerini	ʒj.
Ol. succini	ʒij.
Spirit.	℥xvj.

Dissolve the iodide in 2 dr. of water and add to the glycerine. Then mix with the rest of the ingredients.

To be painted on the parts night and morning.

VI

Camphor	ʒij.
Cantharidis	ʒij.
Table mustard	℥ss.
Oil of cajuput	℥j.
Oil of rosemary	ʒiij.
Alkanet	ʒij.
Oil of turpentine	℥x.

Macerate ten days and filter.

Rub in night and morning.

VII

Curd soap	℥j.
Water	℥iv.

Dissolve by heat and add

Camphor	ʒiv.
Spirit	ʒvj.
Oil of bergamot	♏XLV.
Strong solution of ammonia	ʒvj.

Mix.

To be used as a liniment.

VIII

Iodoform	ʒij.
Oil of thyme	℥ss.
Oil of eucalyptus	℥j.

Rub well in a mortar until nearly all the iodoform is dissolved, then decant the clear portion.

Apply freely to the inflamed part morning and evening.

IX

Tincture of arnica . . ℥j.
Oil of turpentine . . ℥ss.
Spirit of camphor . . ℥j.
One egg.
Dilute acetic acid . . ℥viij.

Beat the egg well up, and make an emulsion with the oil, &c.

After bathing the feet in hot water and drying, rub this liniment into the parts affected and allow to dry before the fire.

X

Lin. saponis . . . ℥vj.
Lin. belladonnæ . . ℥ij.
Liq. epispastici . . ℥j.
M.

To be painted lightly over the parts affected night and morning.

XI

Acid. hydrochlor. . . ℥ss.
Bals. peruviani . . ℥ss.
Tr. benzoini co. . . ℥ss.
Spt. rectificat. . . ℥ss.
M.

To be applied on lint when the parts are irritable.

XII

Chloroform. . . . ℥ij.
Camphor. . . . ℥iij.
Tr. cantharid. . . ℥vj.
Tr. iodi . . . . ℥ij.
Glycerini . . . ℥iv.
Liq. cocci . . . ℥ij.
Spirit. ad . . . ℥x.

Use in the same way as No. x.

Frost-bite Pencil

Paraffin . . . . ℥ix.
Olive oil . . . ℥iiss.
Camphor . . . ℥j.
Iodine . . . . ℥j.
Spirit . . . . ℥ij.

This does not work well, we find, but the following modification is satisfactory:—

Camphor . . . ℈j.
Iodine . . . . ℈j.

Rub up to fine powder with sufficient spirit and add

Olive oil . . . ℥iiiss.

Mix. Then melt with heat

Olive oil . . . ℥iiiss.
Paraffin . . . . ℥iiiss.

Mix with the rest and pour into moulds.

To be used night and morning.

Chilblain-tablet

Yellow resin . . . ℥j.
Yellow wax . . . ℥iij.
Benzoated lard . . ℥vj.
Oil of cajuput . . . ℥j.
Camphor . . . ℥j.

Melt the first three together and strain if necessary. When cooled a little add the camphor and oil, and pour into suitable moulds, such as ½-oz. gallipots cooled in ice-water.

Use it night and morning.

Broken Chilblains should not be treated with any of the above, otherwise much damage may result. Boric ointment, compound tar ointment (p. 32), and Turner's cerate are good dressings for them, and the following is an unfailing healer:—

Ung. hydrarg. ox. flav. . . . ℥ij.
Ung. zinci ad . . . . . ℥ij.
M.

To be used as a dressing night and morning.

Many more formulas for chilblain-remedies are given in the Supplementary Chapter (*see* Index).

CORNS

Cures for corns are likely to last while boots are worn. A corn is simply a growth of the epidermis; in fact, a hardened tumour of skin which takes the form of a little knot or cone. It is caused by pressure, and when it is big enough the pressure forces the point into the tissue, and thus causes pain. There are hard and soft corns. The latter are recent, and often exist between the toes. These are most easily removed: any softening application, such as glycerine or soft soap, sufficing to make them soft enough to remove with the finger-nail. Salicylic-acid preparations are also admirable for these. Hard corns are more difficult to remove, and without a knife or a corn-rubber medicinal applications alone have little effect upon them. Hence it is important that it should be stated on all such preparations that the corns should be pared before they are applied, and further assistance to the remedy must be supplied in a tepid-water foot-bath every other night, after which an attempt should be made to pick out the corn with the finger-nails. The hint that the public require corn-razors and corn-files should not be neglected. The treatment of a corn consists in removing the pressure and friction. Sir Benjamin Brodie popularised the mechanical corn plaster—a small round piece of felt or amadou spread with an adhesive composition, with a hole in the centre corresponding with the area of the tender spot—the use of which assists the corn to revert to the state of callosity. Friction is likewise relieved by the application of grease or soap plaster spread on leather.

The public, however, demand remedies which act quicker than mechanical devices. The older cures consisted of cooling applications such as lead lotion or an ivy leaf soaked in vinegar, or the use of caustics—glacial acetic acid or strong nitric acid. These belong to the past. Nowadays the most popular and in many respects the most effectual remedies for corns are those containing salicylic acid. In these extract of Indian hemp is generally found—why it is

difficult to say, but it gives a nice colour and acts faintly as a sedative. Salicylic Collodion is apt to become gelatinous in the bottles, and this is supposed to be due to some chemical change, such as happens rarely with collodion itself. Probably the pyroxylin changes to the insoluble gun-cotton. But the chief cause of gelatinisation in salicylic collodion is bad corks, or phials with imperfectly rounded necks, which permit ether to evaporate. This point should be noted by those who put up the paint. Pyroxylin made from paper is better than nitrated cotton, as it gives a more limpid collodion.

I

Acid. salicylic. . .	ʒj.
Ext. cannab. ind. . .	gr. viij.
Collodii flexilis . .	℥j.

S.

This is the original formula, which came from Russia in 1882. It is too thick, and is better when made with collodion of three-quarters strength.

Directions.—Paint every night for three nights, soak in warm water, then scrape with a knife, and continue the treatment until the corn disappears.

II

Pyroxylin. . . .	ʒij.
Acid. salicylic. . .	℥iss.
Ext. cannab. ind. . .	ʒv.
Bals. canadensis . .	℥ss.
Ol. ricini . . .	ʒij.
Æther. meth. . . .	℥ix.
Spt. rectificat. . .	℥iv.

Put the pyroxylin in a bottle and pour half the spirit upon it. Shake, add the ether, and shake until dissolved. Add the rest of the ingredients in the above order, dissolving the acid in the remainder of the spirit.

Salicylic acid is the active ingredient in the preparation. It quickly reduces hardened cuticle. The Indian hemp acts slightly as a local anæsthetic, but its presence in the recognised quantity is almost immaterial except for the colour, which the public demand. It may be replaced by ext. belladonnæ, or other suitable colouring-matter, without diminishing the efficacy. The preparation is exceedingly popular and useful, and the names for it are legion. The second formula is a good working one.

The paint is frequently put up in phials with a rubber-covered cork to which a glass rod is usually attached. The paint should be applied night and morning, the feet being bathed in warm water every second or third night, and as much of the corn picked off as will peel away. Then apply the paint.

'Corn-paint' is, *per se*, a dutiable title in Great Britain, but chemists may use it under the exemption conditions, as to which *see* the Appendix. Collodion is not an essential ingredient in salicylic preparations for corns, and those who find it unsatisfactory may try the formulas for amber or green paint, which are good :—

Green Corn-paint

Acid. salicylic.	ʒj.
Ext. cannab. ind.	gr. v.
Resin. commun.	ʒj.
Spt. rectificat.	ʒiij.
Æther. methyl.	ʒv.

M. et S.

Amber Corn-paint

Acid. salicylic.	ʒj.
Resin. commun.	ʒj.
Æther. methyl.	ʒj.

M. et S.

To be used in the same way as salicylic collodion.

Iodine Corn-paint
(For Soft Corns)

Liq. iodi fort., B.P.	ʒj.
Collodium flexile ad	ʒj.

M.

Paint on the corn nightly.

Corn-ointment

Acid. salicylic.	ʒj.
Ol. amygdalæ	ʒj.
Ceræ flavæ	ʒj.
Resinæ flavæ	ʒij.
Adipis	ʒiv.

M.S.A.

Corn-plasters.—Felt corn-plasters are coated with a solution of isinglass, and are not in any sense a cure—simply a protective. The following formulas, however, are for preparations which act upon the corn, and remove it or assist in its removal :—

I

Acid. salicylic.	ʒij.
Emp. belladon.	ʒij.
Emp. resinæ	ʒij.

Melt the plasters by a gentle heat and stir in the acid.

II

Acid. carbolic.	mxx.
Cupri acetat.	ʒj.
Emp. resinæ	ʒiss.

Melt the plaster, and add to it the acetate in fine powder previously mixed with the acid.

The plaster should be spread on swansdown and cut into discs ½ inch in diameter, or be spread in circles that size upon oval-shaped pieces of adhesive plaster 2 inches long and ¾ inch wide at the centre, so as to envelope a toe. The first of these plasters may be placed, to the extent of a few grains, inside a felt corn-ring and strapped on the corn by adhesive plaster. (For more corn remedies *see* pages 574, 575, 856, 858, 869 and 965.)

COMEDONES, OR BLACKHEADS

This annoying but not deadly disorder of the sebaceous glands of the skin is technically termed *Acne punctata.* From various causes, chief of which, perhaps, is torpidity in regard to personal hygiene, these glands become overcharged or plugged with the sebaceous secretion, that part of the fatty matter nearest the surface becomes black by absorbing dirt, and so we get a blackhead or comedone. It can be squeezed out, when it looks like a worm, and some folk still imagine that the string of fat *is* a worm. When there are only a few on the face, that is the shortest way of getting rid of them—viz., to press the tube of a watch-key upon each spot, bathe with warm water and soap, and paint on some spirit of camphor. But when the spots are numerous the trouble must be regarded as a disease; and it is so, for more or less irritation arises, and it is necessary to treat it as a skin-disease.

Strict hygienic conditions must be insisted upon. The people afflicted with comedones are those pasty-complexioned individuals who seem afraid of soap and water, and to whom a rough towel, a smart walk, and other vigorous things which make for health and happiness are abhorrent. If they wish to get rid of their blackheads they must inaugurate personal reform. Many well-known dermatologists recommend washing the parts every night and morning with very hot water, afterwards applying friction with a rough towel (unless there be, as there sometimes is, much inflammation about the pimples). Vapour and Turkish baths, with thorough shampooing, are also useful. The modern treatment of acne consists in the injection of microbic vaccine, but this is not successful as a rule, except when it is made for each patient.

The remedy which enjoys the greatest reputation is sulphur in some shape and form, such as :—

Sulphur	ʒj.
Glycerine	ʒj.
Cold-cream	ʒj.
Mix.	

To be applied freely every night, short of causing pain or inflammation.

A lotion which is much appreciated is the following :—

Precipitated sulphur	ʒij.
Camphor	gr. x.
Gum arabic	gr. xx.
Lime-water	ʒij.
Rose-water	ʒij.

Mix.

Shake the bottle and apply at bedtime, and in the morning remove the sulphur without wetting the skin.

Sulphur ointment, suitably perfumed and coloured, 'takes a lot of beating.'

Preparations of quillaia may be used instead of soap in cases where there is much irritation; for example, a teaspoonful of the liquid extract in a pint of warm water is excellent for sponging the face. The following lotion is suitable to put up as a speciality :—

Ext. quillaiæ liq.	ʒij.
Aq. coloniensis	ʒj.
Liquor. ammoniæ	ʒss.
Aquam ad	ʒxxiv.

M.

Sponge the affected parts night and morning.

The use of any remedy must be stopped if it inflames the skin, and begun again when the inflammation subsides. While this inflammation continues the person should wash with ichthyol-and-tar soap. Internal treatment is decidedly beneficial. The following is a safe and efficacious Skin Tonic :—

Liquor. arsenicalis	ɱxl.
Potass. bicarb.	ʒiss.
Tr. gent. co.	ʒj.
Tr. card. co.	ʒss.
Aq. chloroformi ad	ʒviij.

M.

Dose : A measured tablespoonful thrice daily immediately before food.

Regulation of the bowels must not be overlooked, and an occasional dose of a saline should be taken if required, or the following the first thing in the morning :—

Potassii chloratis	gr. iij.
Magnes. sulphat.	ʒss.
Sodæ tartaratæ	℈ij.
Aq. menthæ pip.	ʒj.

S.

To be followed in a quarter of an hour by a cupful of hot tea.

We give here a selection of formulas for applications which have been recommended and have proved useful. These are suitable for putting up as proprietary preparations.

Dr. Tilbury Fox's Ointment

Ol. cadini . . . ʒss.
Adipis præparat. . . ʒj.

Ft. ung.

Excellent for allaying irritation.

Unna's Ointment

Solution of hydrogen peroxide . . . . ʒj.
Vaseline . . . . ʒj.
Lanoline (anhydrous) . ʒij.
Acetic acid . . . ʒj.

Mix the lanoline and vaseline together and incorporate the peroxide and acetic acid by trituration. Finally perfume.

Unna's Pasta Sulphuris is lanoline 6, acetic acid 7, benz. lard 6, precip. sulphur 20.

Kaolin Ointment

Kaolin . . . . ʒviss.
Glycerine . . . ʒss.
Acetic acid . . . ʒiij.

Make a paste, which is to be applied to the skin at bedtime.

This is not suitable when the comedones are inflamed; it is too irritating. But it is an excellent stimulant.

Resorcin Ointment

Zinci oxidi . . . ʒj.
Resorcin. . . . ʒj.
Vaselini . . . . ʒvj.
Otto rosæ . . . gtt. ij.

M.

Apply to the affected parts at bedtime and wipe off in the morning. An excellent soother.

It should be understood that all these applications only allay irritation and stimulate the glands. To remove the blackhead superficially Dr. Shoemaker recommends :—

Æther. rect. . . . ʒj.
Lin. saponis . . . ʒj.

M.

To be rubbed into the affected parts at night and washed off in the morning.

Unna's Red Nose Ointment

Sulphur. . . . ʒj.
Pulv. amyli oryzæ . . ʒiiss.
Ung. zinci . . . ʒiss.
Ol. rosæ geran. . . gtt. v.

M.

To be applied at bedtime.

FOOT-POWDERS

Chafing of the skin is one of the most irritating little troubles which afflict man in his march from the cradle to the grave. It only occurs in those parts of the body where evaporation of the moisture exhaled from the skin is impeded, and the surface rubs against another—natural or artificial—the result being a chafe or blister. In 'grown-ups' the feet, especially during the summer-time, very frequently give trouble in this

respect. Some cases are due to exceptionally tender skin, others to infrequent change of socks, and most cases to perspiration and friction. It is said that the armies of Europe seldom go on the march without a good supply of dusting-powder for the feet. Keep in a dredger-box, so that it may be sprinkled in the socks and on the tender skin. The powders are usually of an antiseptic and lubricating nature, such as boric acid alone, boric acid and French chalk, salicylated talc, and so on. The reason for the antiseptic will presently appear. These powders are preventive, soothing, and healing. More recently a preparation of the nature of flexible collodion (such as a solution of velvril in acetone) has become popular, not only to protect the skin of the feet, but to cover the tender skin after a day's sharp walk. Under many conditions this liquid skin is of great benefit.

Hyperhydrosis, or excessive perspiration, is a trouble which calls for daily use of dusting-powders. It is recognised by physicians as a disease, affecting the feet, armpits, palms of the hands, and the inside of the thighs particularly, and in certain conditions of health it may suffice to make the sufferer weak. A fetid odour generally accompanies such perspiration, and is believed to be the result of the action of a specific microbe, *Bacillus hyperhydrosis*, upon sweat. Although in the majority of cases, according to Dr. Stretch Dowse, the actual cause of the sweating is neurotic in nature, and tonic treatment is necessary, antiseptic treatment is perfectly rational, and nothing is better than a sodium-bicarbonate dusting-powder.

The best method of using antiseptics is to dust the socks with them, so the powder should be put up in boxes with perforated tops. The following are typical formulas for Foot-powders:—

I

Salicylic acid . . . ʒj.
French chalk . . . ʒiv.
Mix.

Zinc oxide ʒss. may be used instead of the acid, but it is not so effectual.

II

Salicylic acid . . . ʒj.
Powdered zinc oleate . ʒiss.
Starch powder . . ʒiij.

Mix.

III

Salicylic acid	ʒss.
Boric acid	ʒiv.
Violet powder	ʒviij.
Eucalyptus oil	ʒj.

Mix.

IV

Boric acid	ʒj.
French chalk	ʒiij.
Oil of bergamot	♏v.

Mix.

V

Pulv. amyli	ʒxvj.
Pulv. acidi borici	ʒxvj.
Thymolis	ʒj.
Camphoræ	ʒj.

Triturate the camphor and thymol in a mortar till liquid, add the starch little by little, then the acid, and sift twice.

VI

Carmini	gr. ij.
Ol. eucalypti	ʒss.
Pulv. acidi borici	ʒxvj.

Triturate the carmine and oil with 3 oz. of the acid, add the rest, and sift.

No. I. is as good a preparation and efficient antiseptic as any. A similar powder is used in continental armies. We may note here that the powdered French chalk should be Purified Talc. To get this, make French chalk into a thin cream with a mixture of hydrochloric acid 1 part and water 2 parts. Allow to stand for an hour or two, then add much cold water; allow to settle, decant, again wash, and so on until free from acid. Then collect, dry, and sift. For blistered feet No. II. is excellent; so are boric-acid powders, especially those without starch. The addition of much essential oil is a mistake. No. III. comes in this category. A drop or two of oil may be added to each ounce of powder as a perfume, nothing more. The following are typical labels, neither of which involves liability to medicine stamp-duty in Great Britain if not recommended in some other manner for ailments :—

ANTISEPTIC FOOT-POWDER.

AN AGREEABLE AND EMOLLIENT PREPARATION FOR KEEPING THE FEET COOL AND SWEET IN THE WARMEST WEATHER.

Directions.—The powder should be freely dusted over the feet, and into the toes and heels of the socks before walking, and after changing the socks on returning.

JONES'S ANTISEPTIC FOOT-POWDER.

A SURE PROTECTION AGAINST TENDER FEET.

This powder will prove itself a very great boon to all who suffer from tender or perspiring feet. It removes all unpleasantness, keeps the feet healthy and cool, and enables long distances to be walked without tenderness or galling. It is cleanly to use, easily applied, and harmless to health.

Directions for Using.—The powder merely requires to be dusted into the feet of the stockings or socks before putting them on in the morning. The lid of the tin is provided with dredger-holes for convenience in thus using.

As already indicated, practically all that is wanted for perspiring feet, so far as retail trade is concerned, is an efficient antiseptic, preferably with a soapy feeling, which both boric-acid and zinc-oleate powders have. The latter has the distinct advantage of being an excellent healing agent, but it is too expensive for liberal use. Boric acid may be combined with various substances, such as beta-naphthol (10 p.c.), benzoic acid (1 p.c.), or zinc borate (25 p.c.), each having advantages which make it more acceptable to some people.

Those troubled with hyperhydrosis must wash the feet every night with some antiseptic soap and very warm water. After drying, some of the foot-powder should be dusted upon them from the tin. Witch-hazel preparations, such as hazeline, are exceedingly good to apply just after washing; and great benefit is derived from bathing the feet in warm water to which a teaspoonful of Condy's Fluid, with or without a tablespoonful of vinegar, has been added. Still better is it to paint the feet every other night for a week with a 5-per-cent. solution of formaldehyde, which rarely fails. Our experience is that antiseptic dusting-powders are best suited for putting up as specialities.

To err is human, even in the matter of formulas. Thus many years ago a formula began to appear in druggists' journals

which became quite noted (on paper) as a foot-powder for counteracting perspiration. It was this :—

	Parts
Carbolic acid	1
Dried alum	4
Starch	200
French chalk	4
Eucalyptus oil	2

We traced it to its source, and found that it was originally recommended as a foot-powder for Preventing Chilblains! It is good for that purpose and to cure them.

COLD-CREAM

This is one of the unguents of antiquity. The inscription on our ointment-pots, 'Ceratum Galeni,' dates back to the second century of the Christian era, when Claudius Galenus Pergamenus Galenos, the originator of the salve, was an imperial physician at Rome. In the course of ages the composition of the cerate has altered considerably, but the cold-cream of the twentieth century resembles that of the second in containing water. This is an essential ingredient, but whether intentionally added originally, or unintentionally incorporated with the fat in the process of manufacture, history sayeth not. It may be noted that in Culpeper's day cold-cream was made by melting 4 oz. of white wax in 1 lb. of 'oyl of roses omphacine,' the heat of a water-bath being used, stirring constantly, pouring from one vessel to another while it cooled, and lastly washing it with rose-water. It thus happened that a considerable amount of the aqueous fluid was incorporated with the fat, and thereby the principal property of the cream was ensured —viz., its remarkably cooling effect upon the skin. This effect arises from the slow evaporation of the water contained in the preparation.

Some people say—but with what authority they do not venture to tell—that the ideal cold-cream should be one-half fat and one-half water. The ideal is seldom, if ever, attained, the difficulties of compounding and preserving such a preparation being almost insuperable. The preparation is really an emulsion without an emulsive agent, and as two of its

components are exceedingly prone to become rancid—a tendency which is accelerated by the fine division of the fat-globules—it is highly desirable to use only perfectly fresh ingredients, especially white wax which is untainted. It may further be noted that oil of apricot or peach kernels (the so-called ol. amygd. persic.) is not so suitable as the official oil of almonds, because the preparation made with the latter does not become rancid nearly so soon.

Owing to the rancid nature of spermaceti it is now less used than formerly in making cold-cream. If it is omitted the proportion of white wax should be increased to one part for each three of almond oil, or four of the latter for winter use.

I. Unscented

White wax	ʒiij.
Spermaceti	ʒiij.
Almond oil	ʒxvj.
Rose-water	ʒviij.

II. Cold-cream of Roses

White wax	ʒiiss.
Spermaceti	ʒv.
Almond oil	ʒxvj.
Rose-water	ʒvj.
Otto of rose	♏xx.

The wax and spermaceti should be cut small and melted over a water-bath. A 2-lb. jar will do perfectly for that, placing it in a saucepan of boiling water with a layer of tow at the bottom of the pan to prevent the jar being heated too strongly. When the solids have melted add the oil in three or four portions, stirring all the time. Now transfer the mixture to a large Wedgwood mortar, which has been made quite hot by filling with boiling water. Stir the mixture with a bone spatula for ten minutes; then add a portion of the water prescribed, and work it in by stirring constantly, continuing this until the whole of the water has been worked in. This is somewhat more than a labour of love; generally two or three hours elapse before the preparation assumes the appearance of a thick cream, and up to this point stirring must be continuous. The perfume may now be added, and the cream stirred for a few seconds every five or ten minutes, to prevent it setting hard, which it will do if left alone.

This is the correct method of compounding cold-cream on the small scale. The cream can also be made by melting the solids in a large, wide-mouthed bottle, adding the oil, then the water (hot), and shaking the whole energetically until a thick cream is formed. This method is good but thoroughly unorthodox. The cream made according to either of the above formulas is brilliantly white, the first being softer than the other, and better adapted for winter use. Both are suitable for potting, but when well perfumed with otto are rather expensive for

retailing in smaller quantities than 6*d.* pots. The British Pharmacopœia, 1898, contains the following formula, which is taken to be the official representation of cold-cream, and while this preparation is 'cold-cream' it should be distinctly understood that the Pharmacopœia authorities do not publish it as such, or as a standard for retail trade. Cold-cream is not a 'drug' in the sense of the Sale of Food and Drugs Acts, but a toilet article, and the officialising of a preparation resembling it does not make a legal drug of it:—

Unguentum Aquæ Rosæ

Rose-water Ointment

	Imperial	Metric
Rose-water, undiluted	7 fl. ounces	210 cubic centimetres
White beeswax .	1½ ounce	45 grammes
Spermaceti . .	1½ ounce	45 grammes
Almond oil . .	9 ounces	270 grammes
Oil of rose . .	8 minims	0·5 cubic centimetre

Melt together the white beeswax, spermaceti, and almond oil; pour the mixture into a warmed mortar, and add the rose-water gradually with constant trituration; add the oil of rose; continue the trituration till cold.

The following formulas also provide superior cold-creams:—

III. With Borax

Ceræ alb. . . .	℥vj.
Cetacei	ʒiss.
Ol. amygd. . . .	ʒviij.
Aq. destil. . . .	ʒiv.
Boracis	ʒj.
Ol. rosæ virg. . .	♏x.
Ol. bergam. . . .	♏xx.

Melt the fats, &c., in the usual way, and when getting creamy, on cooling, add a warm solution of the borax in the water (*sec. art.*); then add the perfumes.

French Codex (1908)

Cetacei . . .	ʒvj.
Ceræ alb. . . .	ʒiij.
Ol. amygdal. . .	ʒxxivss.
Otto rosæ . . .	gtt. xx.
Aq. rosæ . . .	ʒvj.
Tr. benzoin. (1 in 5) .	ʒiss.

Proceed in the ordinary way, but mix the tincture with the rose-water and stir this mixture in.

V. American Recipe

Ol. amygdal. . . .	ʒvj. ʒij.
Cetacei	ʒij.
Paraffin. dur. . . .	ʒiv.
Aq. rosæ . . .	ʒiij.
Glycerin. . . .	ʒv.
Pulv. sapon. alb. . .	ʒj.

Melt the soap with the oil, spermaceti, and paraffin, and proceed in the usual manner.

VI. With Lard

White wax . . .	ʒij.
Spermaceti . . .	ʒiij.
Almond oil . . .	ʒviij.
Benzoated lard . .	ʒv.
Water	ʒvj.
Otto of rose . . .	♏x.
Oil of bergamot . .	♏x.

Prepare as Nos. I. and II.

The use of lard is objected to by some, as, like all animal fats, it gets rancid rapidly in presence of water, but it favours whiteness. The addition of borax or soap enables the cream to be finished off in much less time, and they have the property of producing a wonderfully white cream, the borax acting also as a preservative. The quantity of borax used varies between ʒj. and ℥ss. to the pound (*see* No. III.). It forms a trace of soap, and thereby acts as an emulsifier; but it should never be employed in first-class cold-cream. If a preservative is desired there is nothing better than rectified spirit with a little chloroform. The proportions required are shown in the next formula. Simple tincture of benzoin is sometimes added.

VII. **With Nut Oil and Spirit**

Spermaceti	℥iij.
White wax	℥iij.
Nut oil	℥xxij.
Water	ʒiv.
Rectified spirit	ʒj.
Chloroform	♏x.
Oil of rose-geranium	♏xxx.
Oil of bergamot	♏vj.

VIII. **With Spirit**

Cetacei	ʒx.
Ceræ albæ	ʒx.
Ol. amygd.	ʒx.
Aq. dest.	ʒij.
Spt. rectif.	℥ss.
Otto rosæ	♏xx.

Dissolve the essential oils in the spirit, and add the solution when the cream is getting cold.

The spirit here enables much less water to be used, because it is a better 'cooler,' and for this reason is often prescribed in ointments by dermatologists; but it is right to note that any divergence such as this from the recognised form detracts from the genuineness of the 'cold-cream.' For the same reason creams made with white soft paraffin do not come within the correct designation, and this mainly because it is impossible to incorporate the usual proportion of water with soft paraffin. But the introduction of lanoline enables us to produce a cream free from the objections to the old form as regards proneness to rancidity, lanoline not only having the property of mixing with its own volume of water, but of enabling us to mix water with substances which otherwise do not mix with it. When 'Cerat. Galeni' occurs in a prescription, such a preparation as No. I. or ung. aquæ rosæ, B.P., should be dispensed: none containing soap or alkali.

IX. Vaseline

Paraff. moll. alb.	ʒxiv.
Paraff. dur.	ʒj.
Lanolin.	ʒiv.
Aquæ	ʒvj.
Otto rosæ	♏xv.
Vanillin.	gr. iv.
Spt. rectificat.	ʒij.

Melt the paraffins on a water-bath, pour into a warm mortar, add the lanoline, and with constant stirring incorporate the water. When of the consistence of a thick cream add the perfumes dissolved in the spirit.

X. Compound Vaseline

Ceræ alb.	ʒiiss.
Cetacei	ʒiiss.
Ol. amygdal. (by weight).	ʒxv.
Vaselin. alb.	ʒviss.
Aq. destillat.	ʒviss.
Boracis	ʒiiss.
Coumarin.	gr. ss.
Otto rosæ	♏xv.
Ol. bergam.	♏xv.
Ol. ros. geran.	♏iv.
Ol. rhodii	♏ij.
Ol. iridis	♏j.
Ess. zibet. (civet)	♏v.

Dissolve the borax in the water and allow the melted fats to become cream before adding the water, and proceed *sec. art.*

See also No. XX., to which S.V.R. ʒiss. may be added.

XI. Lanoline

Lanolin.	ʒviij.
Paraffin. liquid.	ʒij.
Aq. rosæ	ʒiv.
Vanillin.	gr. ij.
Otto rosæ	♏vj.

Mix in a mortar without heat.

XII

Ol. amygd. dulc.	ʒx.	Summer
Ceræ alb.	ʒiss.	ʒij.
Cetacei	ʒiss.	ʒij.
Lanolin.	ʒij.	
Aquæ	ʒv.	
Boracis	gr. xx.	
Aq. rosæ conc. (1-40)	ʒij.	
Ol. geranii	♏xl.	
Ol. santal. flav.	♏x.	
Ol. bergamot.	♏x.	

M.S.A.

Lanoline itself makes a fairly good cold-cream, but it is too sticky; it is much improved in that respect by the addition of the heavy mineral oil indicated in No. XI. For cheapness pale nut oil or apricot-kernel oil may take the place of almond oil in any of the first six formulas, using less perfume and some antiseptic. The following recipes are also reliable :—

XIII.

Ceræ albæ	ʒiv.
Cetacei	ʒv.
Ol. arachis	ʒxxxij.
Aq. rosæ	ʒxvj.
Boracis	℈iv.
Otto rosæ	♏xv.

M.S.A.

XIV. A French Formula

Vaselin. alb.	ʒx.
Ol. amygd.	ʒj.
Ceræ alb.	ʒj.
Aq. rosæ	ʒj.
Ol. ros. geran.	♏v.

M.S.A.

XV

Adipis	℥xij.
Vaselin.	℥iv.
Aq. bullient.	℥v.
Boracis	ʒiij.
Ol. rosæ artifact. vel geran.	♏xx.

Prepare in the same way as No. XIX.

XVI

Ceræ japonic.	℥xviij.
Ol. arachis	℥xiiss.
Aq. rosæ	℥vj.
Acid. boric.	ʒij.

Melt and beat thoroughly in a mortar.

XVII

Cetacei	℥xss.
Ceræ alb.	℥xss.
Ol. amygd.	℥xlviij.
Aq. rosæ	℥xvj.
Ol. bergam.	ʒij.
Ol. rosæ	ʒiss.
Acid. salicylic.	gr. 160

M.S.A.

XVIII

Vaselin.	℥ix.
Cetacei	ʒj.
Ol. amygd.	℥ij.
Aq. rosæ	℥ivss.

M.S.A.

XIX

Petrosin. alb.	lb. ivss.
Ceræ alb.	℥viss.
Cetacei	℥ivss.
Aq. rosæ tripl.	℥xviij.
Otto rosæ	ʒiss.

Melt the first three by the heat of a water-bath, and while cooling add the water and the otto of rose. Beat thoroughly, for the better this is done the better will the cream be.

XX

White wax	ʒiiiss.
Liquid paraffin	ʒxvij.
Borax	gr. xij.
Rose-water	ʒvss.

Melt the wax and add the liquid paraffin, stir, and when quite fluid add the borax, previously dissolved in the rose-water (warm), stirring well until cold.

Ceratum Paraffini, C.F.

Cold-cream

Liquid paraffin	℥xvj.
White beeswax	℥iv.
Spermaceti	℥j.
Borax	ʒss.
Otto of rose	♏x.
Distilled water	℥viij

Mix in the usual manner. In hot weather the white wax may be increased to ℥vss.

Cold-cream for Eczema
(Dr. Allan Jamieson's)

Acidi salicylici	gr. x.
Lanolini	ʒss.
Ceræ albæ	ʒss.
Ol. amygdalæ	℥ss.
Aquæ	℥ss.

Cold-cream Perfume

Ol. neroli	♏xv.
Otto rosæ	♏xlv.
Coumarin.	gr. xv.
Ol. ros. geran.	♏viij.
Essent. ambergris	♏v.
Ol. ylang-ylang	♏iv.
Ol. irid. rad.	♏ij.

Glycerine Cold-cream is made in the ordinary way, using instead of water a mixture of glycerine 1 part and water 2 parts.

In regard to the putting up of cold-cream, a word of warning should be given against the custom of covering pots

with tinfoil: this is a reprehensible practice, and it is questionable if it has any influence in preserving the cream. The best plan is to fill the pots before the cream has set, then place a piece of paraffined paper between the lid and the pot. Vaseline cold-creams, which contain no water and are not likely to affect metal, may be put up in collapsible metal tubes.

SUMMER SPECIALITIES

Summer is a harvest to many retailers, those in watering-places and holiday resorts especially. Apart from increased business in the medicine or dispensing department, it generally affords an opportunity of pushing what are known as 'summer specialities.' We use the term in its restricted sense, for in toilet articles we do not include such things as diarrhœa mixtures or effervescing salines. The section on foot-powders deals with a typical class of preparations wanted chiefly in the summer. The complexion is the main source of revenue, however, and sunburn the trouble which has to be reckoned with. As to prevention of sunburn, we again state that no protective of a fatty nature should be applied, as in a scorching sun this is the best thing in the world to ensure blistering. For example, application of vaseline to the face in the morning before going out into the sun is soothing at first, but by-and-by its bad influence begins to tell, and by the time one gets home blisters are prominent. But if a weak glycerine lotion, or nothing, be used in the morning, the skin merely becomes red by the afternoon, and *then* a liberal application of vaseline is beneficial. Milk of roses and similar preparations, called by old names or new, are safe protectives. It is well, however, to have a special preparation ready for sale, and this is provided in the following :—

Protective Complexion Balm

Blanched Jordan almonds	℥j.
Tincture of benzoin .	ʒx.
Orange-flower water .	ʒxix.
Rose-water to . . .	℥lx.

Reduce the almonds to fine powder and make into a cream with rose-water; then gradually add the rest of the water, strain, and wash the marc with the orange-flower water. Transfer to a Winchester

quart bottle, add the simple tincture of benzoin, and shake.

This should be put up in 6-oz. and 12-oz. white flint bottles, labelled as follows :—

PROTECTIVE
COMPLEXION BALM,
A Delightful Preparation
FOR PREVENTING AND SOOTHING SUNBURN.

Directions.—After washing apply the balm freely to the skin of the face and neck with the corner of a towel, wiping dry in a minute or two. This should be done morning and evening, and during the day if an opportunity permits.

Shake the Bottle.

Oatmeal Toilet-cream

Powdered white Castile soap	ʒiv.
Distilled water	ʒviij.

Mix together and allow to stand covered in a 5-lb. pot overnight; next morning put the pot into a pan of hot water, and stir until dissolved. Meanwhile melt together

Benzoated lard	ʒv.
Pure white wax	ʒiv.

Pour this into the soap solution, agitating briskly at first until both are well mixed, and when nearly cold add in the same manner distilled water ʒviij., and finally the following mixture :—

Otto of rose	ɱxx.
Oil of rose-geranium	ɱxv.
Oil of bitter almonds	ɱx.
Oil of cloves	ɱv.
Rectified spirit	ʒv.
Distilled water to	ʒxx.

Customers should be reminded that soaps of the superfatted class are the best to use. One per cent. of fat in excess is quite sufficient. The perfume should be distinctive, and a little benzoin is a pleasing addition to the soap.

Sunburn Washes are preparations for allaying the intense smarting which follows exposure to sun and wind, *e.g.* :—

I

Ammon. chlorid.	ʒj.
Cocain. hydrochlor.	gr. xij.
Glycerini	ʒiij.
Spt. rectificat.	ʒiij.
Aq. flor. aurant.	ʒij.
Aq. rosæ ad	ʒvj.

M.

II

Acid. hydrochlor.	ʒss.
Acid. citric.	ʒij.
Glycerini	ʒj.
Ess. rosæ alb.	ʒj.
Spt. rectificat.	ʒj.
Aq. destillat. ad	ʒviij.

M.

III

Zinci oxidi	ʒj.
Boracis	ʒss.
Glycerini	ʒij.
Ext. jasmin.	ʒj.
Spt. myrciæ	ʒiij.
Aq. destillat. ad	ʒxx.

IV

Acid. salicylic.	ʒiij.
Boracis	ʒj.
Aq. rosæ	ʒxiij.
Aq. flor. aurant.	ʒxiij.

Dissolve and filter. To the solution add

Aq. coloniensis	ʒij.
Tr. benzoin.	ʒj.

The first of these relieves the irritation marvellously, but its cost is rather against it. Where good prices can be obtained it may be made a leading speciality. The other lotions are excellent general applications which may be more freely used. Such a label as the following is suitable :—

SUNBURN LOTION.

For cooling the skin and relieving irritation following exposure to sun and wind.

DIRECTIONS.—To be applied with a soft rag to the skin of face and neck a few minutes before washing and immediately after.

Freckle-lotions ought strictly to be classed with the foregoing, because few of them are specifics. The freckle is the result of decomposition of the sebaceous secretion, the colouring-matter produced literally staining the cuticle, and it is obvious that the removal of this stain is a great difficulty unless the remedy is applied without delay. Two of the best preparations are :—

Eau des Princesses

Carbonate of potassium .	ʒj.
Spirit of camphor . .	ʒj.
Tincture of benzoin .	ʒj.
Essence of musk . .	ɱx.
Distilled water . .	ʒvij.
Eau de Cologne to . .	ʒxxx.

Dissolve the carbonate in the water and add to the other ingredients previously mixed. Allow to stand for several days and filter.

Lait Antéphelique

Pulv. camphoræ . .	℈j.
Ammon. chloridi . .	ʒij.
Spt. rosæ . . .	ʒss.
Liq. hydrarg. perchlor. .	ʒx.
Albuminis . . .	ʒij.
Aq. destillat. ad . .	ʒxx.

Triturate the powders and add the spirit, then the liquor, and shake until clear. Mix the white of egg with 2 oz. of water in a mortar and slowly add the mercurial solution, making up to a pint with water.

Eau des Princesses is an efficient and safe preparation. It owes its peculiar properties chiefly to the carbonate of potash, which is excellent for removing skin-stains. The same is true of corrosive sublimate, which in the form of Lait Antéphelique (with and without albumen) is much used in

France. As a matter of fact, the most efficacious cosmetics are those containing corrosive sublimate. Curiously, ammonium chloride is almost as good, and we commend it to those who for legal or other reasons wish to avoid the scheduled poison.

Rose Freckle-lotion

Zinci sulphocarbol.	ʒss.
Glycerini	℥ss.
Spt. rectificat.	ʒj.
Tr. cocci	ʒss.
Aq. flor. aurantii	℥ij.
Aq. rosæ ad	℥viij.

M.

Buttermilk Lotion

Acid. lactic. (10 per cent.)	ʒij.
Glycerini	℥ss.
Ess. rosæ alb.	ʒiss.
Tr. benzoin.	ʒj.
Aq. ad	℥vj.

Mix the acid and glycerine with the water, and add the spirit and tincture previously mixed.

The Rose Lotion is well tried and splendid. Our grandmothers had great faith in buttermilk or sour milk, and some of the fine complexions of days gone by have been attributed to its liberal use as a wash. They seem to have been right, for in these more exact and refined days it has been ascertained that dilute lactic acid has the same effect; *ergo* the lactic acid in the buttermilk was the thing that made the fine complexions. But we cannot bottle buttermilk as a speciality, and therefore the formula for Buttermilk Lotion is a substitute which comes as near to it as we can get consistently with stability.

Oriental Extract

Liq. hydrarg. perchlor.	℥ij.
Ammon. chlorid.	ʒj.
Glycerini	ʒij.
Aq. rosæ trip. ad	℥iv.

M.

Freckle-cream

Quince-seed	℥ss.
Ammonium chloride	℥ss.
Honey-water	ʒj.
Hot water to	℥xvj.

Crush the quince-seed and macerate with the hot water for an hour, stirring frequently; then strain through muslin without pressure, and add the chloride of ammonium in powder. Dissolve, add to the honey-water slowly, and shake well.

Freckle-ointments

I

Bismuth. subnitrat.	℥ss.
Glycerini	℥ss.
Lanolin.	℥iij.
Ol. neroli	♏ij.
Ol. ylang-ylang	♏v.

Mix the lanoline and glycerine, and thoroughly incorporate the bismuth and add the perfumes.

II

Cupri oleat.	ʒj.
Vaselini	℥ij.
Otto rosæ	♏ij.

M.

The directions for all the freckle-lotions may be: 'Sponge the face with tepid water and dry thoroughly. Then apply the lotion with a piece of soft cloth. Do this twice daily.' The oleate-of-copper ointment should be applied at bedtime only, but the bismuth one is good for daily use, if the user do not go into scorching sunlight. This preparation is improved by using bismuth oleate in place of subnitrate.

Eau de Lys de Lohse

Zinc. oxidi . . .	ʒv.
Pulv. cretæ gall. . .	ʒv.
Glycerini . .	ʒj.
Aq. rosæ ad . . .	℥xl.

M.

Lilionèse

Potass. carbonat. . .	ʒiiss.
Boracis	℥ss.
Aq. coloniensis . .	ʒiss.
Aq. rosæ ad . . .	℥xxiv.

Dissolve and after two days filter.

There are several varieties of Lilionèse, some of them being excessively alkaline. The one we give is the most useful. It may be made milky by adding tr. benzoin. ʒij. Pulcherine is the same thing without borax, and with essence of vanilla and orange-flower water instead of the perfumes given above.

Insect-bites.—Happy the man whom midges trouble not. He is a rare species. But there are none, with white skin at all events, who can come into association with the mosquito and not be aware of the fact. The business end of a wasp, too, is a thing which we all have become acquainted with some time in our lives. Such things bring grist to the mill we are at present working.

Sting Anodyne Fluid

Menthol. . . .	gr. viij.
Spt. rectificat. . .	ʒvj.

Dissolve and add

Liq. ammon. fort. . .	ʒij.

Put this up in 2-dr. stoppered caustic phials and label appropriately with the direction to 'put a drop of the fluid on the bitten or stung part with the stopper, repeating occasionally if necessary.'

Insect-bite Soother

Acid. carbolic. . .	gr. xv.
Iodi	℥ss.
Potassii iodidi . .	℈iv.
Aq. destillat. . . .	℥iij.

S.

This is to be painted upon the part affected with a camel-hair pencil.

Formic acid is the active principle of the poison of insect

bites and stings, and ammonia cures by neutralising it and acting as a counter-irritant. Iodine is merely a counter-irritant. Some people cannot tolerate ammonia, and these are the very ones who are most pained by stings and bites; for such the following is an excellent remedy :—

Cocainæ hydrochlor.	℈j.
Glycerini	ʒss.
Spt. rectificat.	℥ss.
Aq. rosæ ad	ʒiv.

S. et M.

To be painted over the affected part, and repeated every ten minutes until the inflammation subsides.

Preventive Applications owe their efficiency to essential oils or other vaporisable matter which insects do not like; *e.g.*, ordinary kerosene keeps off mosquitoes. An Englishman thus records his experience in Brazil :—

I anointed my face, neck, and hands with kerosene, and so got some sleep; but as soon as it had evaporated the creatures were at me again. My eye fell on the washstand, and, in a happy moment, I thought of mixing the petroleum in a strong lather of soap. The effect was perfect, and I slept in peace until the morning. Numbers of my friends have used this preventive, not only for the terrible mosquito that conveys the germs of yellow fever or other awful diseases, but to keep off gnats of all kinds, midges, &c., which are to be found in England. The proportion I found best was about a small coffee-spoonful of petroleum to a lather of soap and water which when free from bubbles would fill one-third of the soap-dish. The mixture, of course, smells slightly of the oil, but it is not any stronger than old brown Windsor or coal-tar soaps. No injury whatever is done to the skin, however often it is used, and the slight discomfort felt at first is compensated a thousandfold by the immunity it establishes from mosquito or gnat assaults and the attendant dangers.

This kerosene emulsion may be kept by chemists ready made —say, 1 oz. each of crystal white burning-oil and B.P. soft soap to 4 oz. of distilled water, improving the odour by adding a little oil of lavender, or other perfume of this class, which will remain after the petroleum evaporates. The following are useful preparations for applying before going outdoors. The best parts to apply an anti-midge preparation to are the back of the neck and the forehead, so that the insects may smell it much and their victims little.

Anti-midge

Ol. eucalypti	♏lxxx.
Spt. camphoræ	ʒj.
Lin. saponis ad	ʒij.

M.

Midge Preventive

Glycerini	ʒj.
Tr. absinthii	ʒiij.
Aq. coloniensis ad	ʒij.

M.

Midge and Mosquito Oil

Ol. pulegii	ʒss.
Ol. eucalypti	ʒss.
Lin. camphoræ	ʒvij.

M.

This may also be made with lin. ammoniæ or lin. camph. co., so as to be a cure and preventive. As a preventive use paraffin oil in place of lin. camph.

Anti-midge Powder

Carmine	gr. j.
Eucalyptus oil	♏xv.
French chalk	ʒij.

M.

For use by ladies as a face-powder.

Mosquito Lotion

Insect powder	ʒj.
Acetic ether	ʒss.
Rectified spirit	ʒiv.

Macerate three days, filter, and add

Oil of lavender	♏xv.
Rectified spirit to	ʒv.

Dilute with an equal volume of water before application. The tincture is also useful for spraying in apartments; for this purpose 1 part may be mixed with 10 parts of water and used in a spray-producer.

Tincture of wormwood is made 1 in 8 with proof spirit; to which may be added 10 per cent. of Sting Anodyne Fluid. It is excellent for the purpose; insects literally hate it.

SHAVING-PREPARATIONS

Crème d'Amandes, or almond shaving-cream, sometimes referred to as Naples soap, may really be bought better than anyone, except a soap-maker, can make it, and where small quantities are required we recommend that it should not be compounded by the retailer. The following formulas fairly illustrate the simplest processes of manufacture :—

I

Lard	ʒxj.
Caustic potash	ʒxiij.
Water	ʒivss.

Dissolve the potash in the water and triturate the lard with the solution in a mortar. Allow to stand twelve hours and add

Oil of bitter almonds	♏x.
Rectified spirit	ʒss.

Triturate until the mass becomes pearly in appearance, which can be assisted by the addition of the white of an egg.

II

Curd soap	ʒviij.
Spermaceti	ʒij.
Rose-water	Oj.
Isinglass	ʒj.
Carbonate of potassium	ʒj.
White of four eggs.	
Essential oil of almonds	a sufficiency

Simmer the first three ingredients together till a jelly is formed, add the isinglass dissolved in a minimum of water, then add the carbonate and egg-white previously mixed, and perfume. Colour if necessary with a few drops of a solution of aniline-violet.

The cream is much improved by the addition of some free fat or lanoline. Curiously, however, a large addition—25 per cent., for example—makes the cream almost worthless, because it does not then lather well. The following are good creams :—

Superfatted

Cold-cream	ʒss.
Almond-cream	ʒxiss.
Oil of neroli	ɱv.
Eucalyptus oil	ɱx.
Rose-water	ʒij.

Put the cold-cream in a warm mortar and mix the almond-cream with it, occasionally adding some rose-water. When thoroughly mixed add the perfumes.

Lanolinated

Lanoline	ʒss.
Almond-cream	ʒx.
Rose-water	ʒiv.
Coumarin	gr. ij.
Oil of ylang-ylang	ɱx.

Mix in a similar manner to the superfatted shaving-cream, triturating off and on for several hours, so as to get a nice appearance.

These creams should be put up in collapsible tubes. They can stand much more water.

Barber's Cream

Lanolini	ʒss.
Lin. camphoræ	ʒss.
Saponis mollis	ʒxvj.

Put the lanoline and oil into a warm mortar and stir, adding the soft soap little by little and with constant stirring, aiding the mixture with from ½ oz. to 1 oz. of rose-water; then add the following perfume :—

Ol. cinnamomi	ɱv.
Ol. bergamot.	ɱxv.
Ol. amygdal. essent.	ɱviij.

M.

Balsamic Shaving-paste

Beef-suet (rendered)	ʒxiiss.
Cocoanut oil	ʒvj.
Solution of soda 1·260	ʒviiiss.
Solution of potash 1·260	ʒx.

Melt the fats on a water-bath, remove, and add the alkali solutions, maintaining the mixture at 50° C. for half an hour, stirring all the time, or until it becomes uniform ; then perfume with the following :—

Oil of peppermint	ɱx.
Oil of bergamot	ɱxl.
Oil of lavender	ɱxv.
Oil of neroli	ɱv.

A better balsamic paste is obtained from lard 2 lbs. and potash solution (1·33) 1 lb., heating for several hours at 100° C.

Shaving-creams of the 'Euxesis' type, which are simply to be rubbed upon the skin to assist in shaving, and not to lather, are generally sapo-oleaceous emulsions of exceptional thickness, as exemplified on the next page.

I

Cocoa-butter	℥ss.
Almond oil	℥ss.
Glycerine	℥j.
Primrose soap	℥ss.
Otto of rose	♏iv.
Oil of neroli	♏iv.
Oil of bitter almonds	♏v.
Distilled water	a sufficiency

Melt the cocoa-butter and almond oil and pour into a warm mortar containing the soap previously rubbed down with 3 oz. of boiling water; stir briskly to make a uniform cream, slowly adding 4 oz. of warm water previously mixed with the glycerine; finally the perfumes.

With 4 oz. of rose-water and no glycerine this gives a cream suitable for potting.

II

Pulv. tragacanth.	℥ss.
Spt. rectificat.	℥iv.

Put together into a dry corbyn quart and shake, then add the following in their order:—

Crem. amygdal.	℥j.
Ol. amygdal.	℥ij.
Glycerini	℥v.
Aquæ	℥xlv.

Mix well and perfume with

Ol. ros. geranii	℥j.
Ol. bergamottæ	℥ij.
Ol. neroli	℥ss.
Ol. citronellæ	♏xx.
Spt. rectificat.	℥j.

Aseptic Shaving Cream

(Mr. Edmund White's improved).

Hard paraffin (m.p. 55° C.)	22 parts
Prepared suet	3 ,,
Soft soap	2 ,,
Boiling water	68 ,,

Place these materials in a vessel surrounded by boiling water, and when the fats are melted beat them together until a smooth, white emulsion is obtained. Continue the beating, maintaining the temperature above 70° C., and shake in gradually

Powdered tragacanth	2 parts

When the mixture is homogeneous, cool by removing the boiling water, and when nearly cold add

Glycerine	2 parts
Oil of lavender	1 part

This cream is for smearing the skin in ordinary toilet use, or in shaving any part of the body preparatory to surgical operations.

Cremor ad Rasendum (B.P.C.) is a modification of this. Tallow 4 oz. and white wax ¾ oz. are melted, and hard soap 200 gr., dissolved in warm distilled water 10 oz., added to it. When the emulsion cools to 50° C., add (mixed) powdered tragacanth 45 gr., powdered starch ¼ oz., oil of lavender 20 minims, oils of lemon and wintergreen of each 10 minims, and water to make the whole weight 20 oz.

Shaving-powder

Powdered soap	℥xxx.
Powdered spermaceti	℥ss.
Coumarin	gr. iij.
Oil of bergamot	♏x.
Oil of wintergreen	♏iij.

Mix well.

May be made antiseptic by the addition of benzoic acid (1 per cent.) or salol (5 per cent.). The powder is sprinkled upon the wet shaving-brush.

Menthol After-shave

(*A Cooling Application*)

Menthol	gr. v.
Powdered tragacanth	℥ss.
Rectified spirit	℥ss.
Glycerine	℥ij.
Water to	℥vj.

Dissolve the menthol in the spirit and add to the tragacanth contained in a dry bottle; add the water; shake; add the glycerine, again shake.

The mentholated tragacanth mucilage is not a nice application for the cheeks, but if the tragacanth is omitted and an ounce of bay rum added we get an agreeable cooling application. The best after-shave is bay rum. Few English barbers use this liberally, because the price of it does not fit in well with the usual charge for shaving. It is only in the United States, where sixpenny and shilling shaves are the rule, that barbers can afford to soak a large part of a towel with bay rum, and pat it round the cheeks. The effect is delicious, and is not approached by a spray.

Razor-pastes must be made with the finest powders possible; they should be properly elutriated.

Black

Blacklead	ʒij.
Mutton-suet	ʒiij.
Oil of bitter almonds	ɱij.

Mix.

May also be made with equal parts of levigated emery and blacklead.

Red

Levigated rouge or ferric oxide	ʒij.
Putty-powder	ʒss.
Mutton-suet	ʒiij.
Oil of peppermint	ɱij.

Mix.

AROMATIC AND TOILET VINEGARS

It is said that fans and flirtation go together. Once upon a time the vinaigrette played as important a part as the fan, and there was as much art in using the former as there was, is, or ever will be in using the latter. The good old fashion seems destined to extinction, and few there are who use the dainty stimulators for other than a purely conventional purpose. Nevertheless we should be too bold to oust the decaying fashion by omitting formulas for aromatic vinegar. There is a clear distinction between it and toilet vinegar, the purposes of which are set forth in the label afterwards given.

Acetum Aromaticum, or Aromatic Vinegar

I

Oil of cloves	ʒj.
Oil of lavender	ɱxl.
Oil of lemon	ɱxl.
Oil of bergamot	ɱxx.
Oil of cinnamon	ɱx.
Oil of neroli	ɱiv.
Glacial acetic acid	ʒj.

Mix.

II

Ol. bergamot.	ʒj.
Otto rosæ	ʒss.
Ol. caryophylli	ɱxv.
Ol. neroli	ɱviij.
Ol. lavandulæ	ɱxv.
Acid. acet. glacial.	ʒv.

M. et S.

Toilet Vinegar.—Labels for this preparation, while stating its virtues, must not (in Great Britain at least) refer to the prevention or relief of human ailments, otherwise the vinegar, although a toilet article, will be liable to medicine stamp-duty. The following description was at one time generally used, and we print it with the dutiable matter in italics :—

On account of its antiseptic properties Toilet Vinegar is very useful in preventing the spread of the contagion of fevers, measles, whooping-cough, &c. It is an elegant, cooling, and refreshing compound, a delightfully fragrant and antiseptic preparation for use in the sick-room. A little sprinkled about the carpet or on pads hung about the room will effectually disinfect the apartment and remove foul or unpleasant odours, and purify the air from microbes of any description. A few drops sprinkled on the person before visiting the sick or infected places will prevent contagion. Invalids will find a little mixed with the water for washing or the bath most comforting and refreshing; *and a few drops on the handkerchief inhaled or applied to the forehead is good to prevent fatigue and headache.* Can be used with advantage in all the toilet operations of the sick-chamber.

The best toilet vinegar is made by distillation from a vinegar of herbs and flowers, and is free from alcohol. Originally the vinegar employed was distilled from copper acetate, and contained acetone.

I

Æther. acetic.	ʒij.
Acid. acetic. glacial.	ʒiij. ʒvj.
Tr. eucalypti glob.	ʒj. ʒvj.
Aq. coloniensis	℥xxx.

M.

The Eau de Cologne for this is made according to the following recipe :—

Ol. neroli	ʒvj.
Ol. rosmarini	ʒvj.
Ol. aurant. amar.	ʒxj.
Ol. limonis	ʒxj.
Ol. bergamot.	ʒxj.
Aq. flor. aurant. trip.	℥x.
Spt. rectificat.	Cong.j.

M.

II

Mixed oils for eau de Cologne	ʒiij.
Thymol	gr. v.
Glacial acetic acid	ʒiiss.

Dissolve and add

Water to	℥xv.

Mix with fullers' earth ½ oz., agitate occasionally for a day or two, and filter.

III

Balsam. peruv.	ʒiiiss.
Spt. vin. rect.	℥xx.

Digest four days with occasional agitation, then add

Acid. acetic. glacial.	℥iv.
Æther. acetic.	ʒij.
Aquæ rosæ trip.	℥j.

Digest two days longer and filter, using powdered pumice-stone if necessary. To the filtrate add

Ol. eucalypti	ʒj.
Ol. limonis	♏xx.
Ess. vanillæ	ʒj.
Ol. rosæ virgin.	♏x.
Ol. cinnam.	♏xv.
Ol. menth. pip. ang.	♏iij.
Spt. vin. rect. ad	℥xl.

M.

IV

Acid. acetic.	℥viij.
Ol. rosmarini	℥j.
Ol. caryophylli	℥j.
Ol. lavandulæ	℥ij.
Ol. geranii	℥j.
Camphor.	℥j.
Tr. iridis	℥v.
Ess. vanillæ	℥ij.
Spt. rectificat. ad	Oiij.

M.

Refreshing Lotion

(For bathing the face after exercise)

Aq. lavandulæ	ʒj.
Liq. ammoniæ, B.P.	ʒss.
Spt. rectificat. ad	℥iv.

M.

A teaspoonful to be put into a washhand-basinful of water, and the mixture used to bathe the face with a sponge. No soap to be used.

SMELLING-SALTS

From the modest penny pungent to the magnificent cut-glass vase of lavender salts there is a long step; some good business, and much art. A man may be able to dispense an intricate prescription accurately, and yet be a poor hand at filling a smelling-bottle. We are speaking now of those which are not of the lavender-salts type; and before referring to materials, we may call attention to the importance of stocking only the best styles of bottles. A good, white-glass, neatly cut, large-mouthed 'Preston' is worth double the price of a narrow-necked, fanciful-shaped bottle which may have cost more; and customers soon get to know this. See that the bottles have perfectly fitting stoppers. If bottles with imperfect stoppers be used, they only bring discredit on the contents and the filler. The secret of inexhaustible salts is in the stopper, not in the salts. One essence will keep its pungency as long as another provided the stopper be right. There are plenty of good bottles to be had, but there are more bad ones. It takes some experience to know a good one from a bad, but attention soon generates the requisite detective acumen.

At the present time, when ammon. carb. in cubes, balls, &c., has brought in new styles and methods, the old-fashioned way of filling a 'Preston' is likely to be forgotten, so we describe it.

The necessary materials for filling are few and simple. Sponge, carbonate of ammonium in rough powder, aromatic ammoniacal essence, and a pièce of wire about six inches long, and just thick enough not to bend easily, having one end flat

and the other sharpened and turned up for hooking out pieces of sponge from bottles that require to be emptied—these are all that is ordinarily necessary. The sponge should be well cleaned, dry, and cut into pieces uniform in size and colour. It spoils the appearance of a filling to have a piece of brown sponge where the bulk is white, or *vice versa*. The carbonate of ammonium should not be too finely powdered, but neither should it contain large pieces. A light shake on a sieve to take out the finest of the powder is all that is necessary to provide this chemical in suitable condition. The principal points to be considered in selecting an essence are to have one which gives pungency, and which does not become very brown.

When sponge is used for charging fill the bottle two-thirds full of the essence previously well shaken, and put in sponge till every corner of the bottle is filled. If the sponge be judiciously manipulated it can be made to fill the bottle thoroughly without necessity for packing. An expert can get in more essence than the quantity specified, but this quantity will make the 'bottle' strong enough for most people, and there is no fear of it running out. When salts are wanted, if the bottle hold, say, 2 dr. of the rough powder, about a third of the powder should be put in and gently pressed down and three drops of the essence added, then the other two-thirds added in the same way; but with the last five drops of essence may be added instead of three.

These are the chief points to note in filling. We do not desire to underrate the importance of a good essence, and we append a selection of formulas, all of which have been or are used by leading chemists.

Volatile Essences

I		II	
Camphor.	ʒss.	Ol. rosæ virgin.	ʒij.
Ess. moschi	ʒss.	Ol. lavand. ang.	ʒiss.
Ol. limonis	ɱxxx.	Ol. bergamot.	ʒiss.
Ol. lavand. ang.	ʒj.	Ol. cinnamom. ver.	ʒss.
Ol. bergamot.	ʒiij.	Ol. caryoph.	ʒss.
Ol. caryoph.	ɱxx.	Ess. moschi	ʒj.
Liq. ammon. fort.	ʒviij.	Spt. rect.	ʒiv.
M.		Liq. ammon. alcoholic.	ʒx.
		M.	

III

Ol. lavandulæ. . .	ʒj.
Ol. rosmarini . .	ʒj.
Ol. bergamottæ . .	ʒj.
Ol. caryophylli . .	ʒss.
Ol. cinnamomi . .	ʒss.
Liq. ammon. fort. . .	ʒxij.

IV

Ol. lavand. ang. . .	ʒj.
Ol. bergam. . . .	ɱxl.
Ol. rosmar. . . .	ɱxv.
Liq. ammon. fort. . .	ʒiij.

M.

No. II. is a formula of which the Duchess of Kent, mother of the late Queen Victoria, was very fond, and smelling-salts made with it were at one time as popular as lavender salts are now. The process designed and published by Allchin for making inexhaustible salts or Monocarbonate of Ammonium is as follows :—

Take carbonate of ammonium 4 oz., break into small pieces, place in a jar, and pour over it liq. ammon. fort. 2 oz. Stir every day until the monocarbonate has become hard enough to powder. This is not an easy thing to do, but if daily attention be given to the mixture it turns out all right. Keep in well-stoppered bottles. Perfume with a mixture of

Oil of lavender	ʒiv.
Essence of musk	ʒiv.
Oil of bergamot	ʒij.
Oil of cloves	ʒj.
Oil of cinnamon	gtt. v.
Otto of rose	gtt. x.

Another process for making Inexhaustible Salts is to mix ammonium chloride and potassium carbonate together, when the volatile carbonate is slowly generated. Such salts are very lasting. The following are the best formulas of this type :

I

Ammonii chloridi . .	ʒviij.
Potassii carbonatis . .	ʒiij.
Camphoræ . . .	℈ij.
M. et adde	
Liq. ammon. fort. . .	ʒss.
Spt. rectificat. . .	ʒss.
Ol. caryophylli . .	ɱxx.
Ol. rosmarini . . .	ɱxx.
Ol. cassiæ . . .	ɱx.
Ol. limonis . . .	ʒss.
Ol. bergamottæ . .	ɱxx.
Moschi	gr. j.

II

Ammonium chloride .	ʒiss.
Potassium carbonate .	ʒj. ʒvj.
Camphor . . .	ʒj.
Ammonium carbonate .	ʒiij.
Oil of cloves . . .	ɱx.
Oil of bergamot . .	ɱx.
Oil of spearmint . .	ɱiv.

Powder the solids and mix with the oils.

Pack either of these into bottles as above directed.

Lavender Salts.—The simplest way to make these is to fill the bottle with clear pieces of carbonate of ammonium and

add a sufficiency of a solution of oil of lavender ʒij. in alcoholic ammonia ℥iv. If alcoholic ammonia is not available, use liq. ammon. fort., 0·880, 1 part, and S.V.R. 3 parts.

The carbonate of ammonium should be carefully selected. The 'volcanic' variety was the best, but that is no longer made. Specially compressed cubes are now obtainable. The globular form of filling is sal prunella. Opal glass balls serve just as well. There is no reason why the lavender perfume should be strictly adhered to; any of the essences given above do as well if alcoholic solution of ammonia is used to make them. The essence must be strongly alcoholic, otherwise it dissolves the carbonate and makes the bottle messy. A trace of rose or neroli may be added to the lavender to round it off a little, and the solution may be tinted with a mixture of phenylene and methyl blues (violet), cudbear tincture (red-blue), eosin-yellow (yellow), and safranine (pink); and green may be obtained with the blues and eosin-yellow.

Anticatarrhal Salts have become a regular article of retail since the introduction of Alkaram, and the first formula given below affords a similar preparation. The others are approved, and are regular stock articles.

I

Camphor.	ʒj.
Ammon. carb.	℥iss.
Pulv. carbon. ligni	℥j.
Acid. carbolic.	♏xl.
Ol. santali	ʒj.
Ol. origani	ʒj.
Liq. ammon. fort.	♏xx.

Mix the powders and add the mixed liquids.

II

Ammon. carb. contus.	℥ss.
Pulv. carbon. ligni	gr. xv.
Phenol.	♏iij.
Liq. ammon. 0·880	♏x.

M.

III. Martindale's

Absolute phenol	24 parts
Carbonate of ammonium	16 parts
Strong solution of ammonia	44 parts
Oil of lavender	1½ part
Camphor	3 parts
Pine sawdust	a sufficiency

Mix.

IV

Ammon. chlorid.	℥ij.
Potass. carbonat.	℥iss.
Iodi	ʒij.
Acid. carbolici	℥ss.
Ol. eucalypti	ʒj.

M.

The ingredients should be rubbed together in a mortar, and filled into the bottles just tightly enough to prevent falling

out should a bottle be upset. Very tight packing is objectionable. Salts of this description should not be very strong in ammonia, the object being to let them be freely inhaled. The first is, on the whole, the best basis, and with the addition of lin. iodi ʒj. it affords a most beneficial anticatarrhal bottle. The perfume may be modified, eucalyptus oil being the favourite. No. IV. should have the oil added to the bottles.

MISCELLANEOUS TOILET PREPARATIONS

Several of the formulas following are supplementary to those already given for specific purposes :—

Antiseptic Face-lotion

Zinci sulphocarbol. . .	ʒiv.
Zinci oxidi . . .	ʒij.
Glycerini . . .	ʒj.
Liq. cocci . . .	♏x.
Aq. rosæ ad . . .	ʒxx.

M.S.A.

Bath-powder

I

Crystal carbonate of sodium (Crescent brand) is now generally used. To colour and perfume, dissolve aniline-violet 2 gr. and ionone ½ dr. in 1 oz. of spirit, spray over 2 lbs. of crystals, stirring well all the time, and keep to mix with the bulk.

II

Borax	ʒiv.
Oil of lavender . .	♏x.
Cassie extrait . . .	ʒj.
Jasmine extrait . .	ʒj.

Use a heaped teaspoonful for the bath, and as much as will lie on a sixpence for a basin.

Bath-tablets

Sodium bicarbonate .	ʒiij.
Tartaric acid . . .	ʒiiss.
Starch powder . .	ʒiv.
Oil of lemon . . .	ʒss.
Oil of orris (or ionone) .	♏v.
Oil of ylang-ylang .	♏v.

Mix the oils with the starch, add the other ingredients, and mass with methylated ether containing 20 grains of benzoin in each ounce. Divide into tablets and dry.

These are similar to Pasta Mack.

Black-eye Treatment

If the case is seen soon after the injury, the treatment consists of cold compresses or cooling lotions, which diminish the swelling and coloration. If not seen until the coloration has developed, hot compresses and massage are indicated. When the swelling has subsided and the blackness shows, flannels wrung out of hot water should be allowed to lie upon the lids and be changed every few minutes, continuing the operation for an hour or so three times a day or oftener. Massage is practised by gently rubbing with the finger-tips, using vaseline as the lubricant. Professional 'black-eye' artists are said to use scraped bryony-root for removing the coloration, and the root of Solomon's seal has a reputation for the same purpose. A cooling lotion is prepared by diluting tincture of arnica (1 to 7 of water).

Bosom-developer

Powdered tragacanth .	ʒj.
Glycerine . . .	ʒj.
Elder-flower water . .	ʒiij.

Mix the tragacanth with the glycerine and add the water gradually. The water should be slightly tinted with methyl-violet dye.

This preparation is to be well massaged into the bosoms at bedtime.

This represents the usual treatment for developing the bosoms ('as advertised'). An internal medicine (pancreatin tablets, or a tonic tablet of arsenic and Blaud's pill) is used along with the external preparation. Strange to say, we found a massage-jelly for the reduction of superfluous flesh to be a tragacanth preparation perfumed with neroli and lemon, without any active medicinal agent, and a popular soap for the same purpose contained pancreatin. Ox-gall is sometimes added.

Chap-salve

Lanolini	ʒj.
Petrolati albi	ʒiij.
Glycerini	ʒiv.
Flor. camphoræ	ʒss.

Melt the first two and add the camphor; when dissolved, place in a mortar, and while stirring add the glycerine.

Creamy Skin-lotion

Crem. amygdal. sapon.	ʒvj.
Ol. amygdalæ	ʒss.
Glycerini	ʒiss.
Aq. destillat. ad	ʒxij.

Triturate the almond shaving-cream in a mortar, dropping the oil on it until it is all incorporated; then add 3 oz. of water in the same way. Mix the glycerine with 5 oz. of water and a drachm of sweet-pea perfume; add this to the mortar-contents so as to form a good emulsion, and make up.

Face-massage Spray

Tr. benzoin. simp.	ʒss.
Spt. rectificat.	ʒij.
Ol. neroli	miij.
Ol. menth. pip.	mij.
Glycerini	ʒij.
Aq. rosæ ad	ʒvj.

Mix the first four ingredients, and add to the glycerine and water previously mixed and containing a drachm of fullers' earth. Shake well and filter.

Greaseless Face-cream

Quince-seed	ʒj.
Boiling distilled water	ʒxij.

Wash the seed with a pint of water, then macerate in the boiling water for two hours, stirring occasionally. Strain and add gradually, shaking well, to the following solution:—

Borax	ʒss.
Boric acid	ʒss.
Distilled water	ʒxij.

Then add

Glycerine	ʒx.
Rectified spirit	ʒiss.
Otto of rose	mx.
Artificial jasmine	mvj.

See Supplementary Chapter.

Lotion for the Eyebrows

Common salt	ʒj.
Chloride of ammonium	gr. x.
Camphor	gr. v.
Oil of rosemary	mv.
Rectified spirit	ʒss.
Water to	ʒviij.

Dissolve the camphor and oil in the spirit and add to the water containing the salts.

Massage Enamel

Bismuthi carbonat.	ʒj.
Cretæ gallicæ	ʒss.
Stanni oxidi	ʒj.
Ol. rosæ geranii	mx.
Ol. lavandulæ	mx.
Vaselini	ʒiss.

Massage Cream

Hydrous wool-fat	ʒviij.
Benzoated lard	ʒviij.
Glycerine	ʒiv.
Rose-water	ʒxij.
Lard oil	a sufficiency
Oil of rose-geranium	ʒiij.

Mix the wool-fat and lard, and gradually incorporate the mixed glycerine and rose-water; when well mixed, add the oil of rose-geranium. The lard oil is only to be added in case the mixture is deemed too thick.

Massage Pastes

I

Powdered tragacanth	ʒij.
Glycerine	ʒj.
Zinc oxide	ʒij.
Rose-water	℥xij.

II

Lanoline	℥iij.
Soft paraffin	℥iij.
Borax	ʒss.
Zinc oxide	ʒss.
Tincture of benzoin	ʒss.

Powdered boric acid made into a paste with white soft paraffin, coloured pink and perfumed, is also used.

III. Wrinkle-remover

Alum. et tannin.	aa.	ʒj.
Glycerini amyli		℥viij.

Dr. Sand's Massage-base (Skin-food)

Cold-cream No. xx.	℥iv.
Lanoline	℥iv.
Oil of theobroma	℥iv.
White petroleum	℥iv.
Distilled water	℥iv.

Prepare like cold-cream. In hot weather add spermaceti ʒiss. and white wax ʒiiss.

Massage Lotions

Cooling. — Witch-hazel essence ℥j., rose-water ℥iij.

Freckle. — Zinc sulphocarbolate ʒss. to ℥j. of a mixture of glycerine (1) and perfumed water (5).

Healing.—Zinc oxide with glycerine and rose-water.

Tonic.—Tr. benzoin. ʒss., liq. hamamel. ʒj., glycer. ʒj., aq. rosæ ad ℥j.

Wrinkle.—Liq. hamamel. ℥ij., gly. ac. bor. ℥j.

Paint for Black Eyes

Bismuth subcarbonate	ʒij.
French chalk	ʒj.

Mix and colour with carmine, Armenian bole, or calamine to skin tint. Apply after washing the parts with a mixture of

Glycerine	ʒj.
Water	ʒv.

Prepared Fullers' Earth

A good quality of well-calcined earth is digested for a day in hydrochloric acid (1 in 2), washed thoroughly with water, dried, and sifted. It is then mixed with half its weight of French chalk.

White Fullers' Earth is finely sifted kaolin.

Sweaty-hands Lotion

Formalin.	℥ss.
Aq. rosæ ad	℥viij.

M.

To be applied morning and evening and allowed to dry on.

Sympathetic Blush

This is a very weak solution of alloxan (gr. v.) in glycerine (℥j.) and water (℥xj.). Alloxan is methoxalylurea [$CO(NH.CO)_2CO,H_2O$], and when first introduced was called erythric acid owing to the property which its dilute solutions in water have of dyeing the skin a red colour. The solution itself is colourless. The colour imparted to the skin varies from pale pink to purple according to the strength of the solution. The colour is destroyed by weak nitric acid.

Toilet Oatmeal

I

Powdered orris	℥j.
Ionone	♏x.

Triturate for five minutes, then add

Oatmeal (medium, and sifted free from flour)	℥xij.

Mix.

This is for washing the hands.

II

Powdered orris	℥j.
Oil of neroli	♏ij.
Oil of bergamot	♏v.

Triturate well and add

Finely sifted oat-flour	℥viij.

Mix and sift three times.

This is a dusting-powder.

Witch-hazel Cream

I

Ext. hamamelidis dest. .	ʒiij.
Lanolini anhydros. . .	℥ij.
Paraffin. mol. alb. . .	ʒj.
Ol. neroli . . .	♏vj.

M.S.A.

II

Curd soap, in shavings .	ʒiss.
Distilled witch hazel .	℥iij.
Glycerine . . .	ʒss.
Distilled water . .	℥iv.

Mix the soap with the glycerine and the water, and allow to stand (covered) for twelve hours. Then stir in the witch hazel.

Toilet Ammonia

For Bath, Toilet, &c.

Liq. ammon. fort. . .	ʒvj.
Aq. lavand. . . .	℥j.
Sapon. commun. dur. .	℈ss.
Aq. destill. ad . .	ʒxvj.

M.S.A.

HINTS ON PUTTING UP SPECIALITIES

The following hints may not be altogether out of place in a book dealing with a large number of articles whose value often depends as much upon the manner in which they are put up as upon their intrinsic qualities :—

Bottles should be characteristic and good ; a badly made bottle is an eyesore to the purchaser and a disgrace to the seller. Have them of the best 'metal,' with the name of the article on them if possible. If flats, let the angles be well defined : this adds greatly to beauty of appearance. Actinic phials make a good contrast with white glass, and are very useful. Panelled bottles may be extensively used when the article is sent out wrapped. For brilliant liquids nothing is more handsome than good white glass. It is now getting to be a recognised custom to put up hair-preparations in one particular style of bottle, toilets in another style, dental preparations in another, and so with labels and wrappers.

Twine.—If white, let it be thoroughly bleached ; if coloured, well dyed. The most useful colours are pink, lavender, and white.

Sealing-wax should be sparingly used, or not at all, on corks of counter specialities. Use rather the embossed circular labels, and a pleated or other cap.

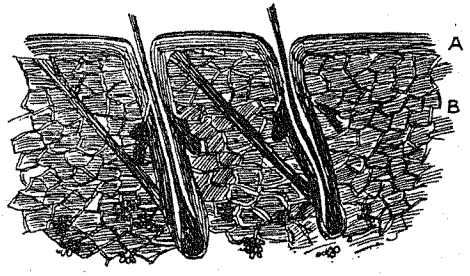
Labels.—On the attractiveness of the label depends to a great extent the sale of a proprietary article. There is no excuse nowadays for ugly labels, as it is easy to obtain really artistic productions at very little cost. It is cheaper to spend 5*s.* on an original label of your own than 2*s.* 6*d.* on twice as many stock labels of the printer's which your neighbour may have also. Compose the wording of your own labels. There is plenty in this book which will assist you. The examples of labels given may also assist, but do not follow the styles of type given here, as these have been selected to fit the pages and not the bottles. Avoid gilding as far as possible, and stick to good-quality paper, nice-tinted inks, and distinctive, plain type without fancy borders. The florid age ended with crinolines.

Wrappings, Cartons, &c., give much scope for taste and gold, especially if embossing is indulged in. Better no carton at all than a cheap-looking one. The carton is a thing to indicate to the buyer that the article enclosed in it has a large sale. So do not use plain cartons with labels stuck on.

PREPARATIONS FOR THE HAIR

Summary.—Hair Structure—Diseases of the Scalp and Beard—Care of the Hair—Hair-dressings—Pomades—Hair Oils—Hair Oil Perfumes—Brilliantines—Lime Creams—Bay Rum—Hair Lotions and Hair Washes—Dandruff Treatment—Nit Preparations—Special Hair Lotions—Alopecia Applications—Cosmetics for Fixing the Hair—Hair Curlers—Hair Restorers—Hair Dyes—Depilatories—Shampooing Preparations—Miscellaneous Formulas.

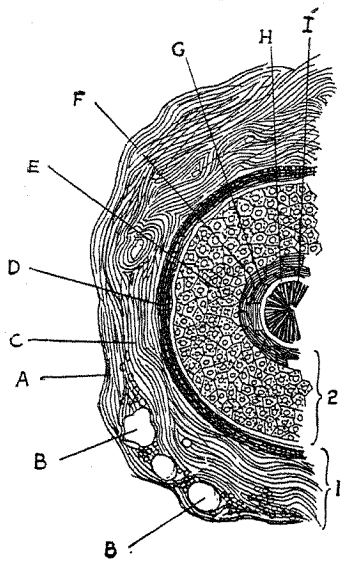
THOSE who manufacture preparations for the hair are, more often than not, ignorant of the structure and physiology of the hair, and it may therefore be advantageous to preface this selection of formulas with a general statement upon structure



MAGNIFIED SECTION OF THE SKIN OF THE HEAD, WITH TWO HAIR FOLLICLES. A, Epidermis; B, Corium.

and functions. The hair is a solid fibre springing from a depression in the skin which forms the root-sheath, or follicle; and, as if to show the importance of a healthy head of hair, Nature has provided this sheath with an exceptional supply of capillary blood-vessels and fat-glands to ensure ample nourishment and flexibility. There are some 100,000 of these skin depressions in the head on the average, and, if the conditions

are normal, as many hairs to fill them. The 'root' of the hair is a small, elongated bulb, not unlike the end of an Indian club. This root is not separate from the sheath, for the cellular growth is continuous, and if the hair be forcibly pulled it will either snap off above the skin or will come out by the 'root,' part of the sheath coming with it. It is at the bottom or 'root' of the hair that growth takes place; as a matter of fact, the 'root' is ever changing, so that the 'root' part to-day is part of the shaft to-morrow. The root and shaft are therefore essentially the same in structure, and consist of a central portion called the medulla, or pith, and the cortical portion; but in some hairs it is not possible to distinguish the two parts. The development of the hair *ab initio* commences at the bottom of the follicle, and by the aggregation of successive cytoblasts, or new cells, the hair is gradually protruded from the follicle, both by the elongation of its constituent cells and by the addition of new layers to its base, the apex and shaft being formed before the bulb. The cells are round and loose at the base of the hair, but are more compressed and elongated in the shaft, whereby the hair appears to have a fibrous appearance. The cortical portion consists of epithelial cells laid on like tiles on a roof, so that when viewed by a high magnifying power the edge of the hair appears to be serrated. The colour of the hair is due to pigment



SECTION OF HAIR FOLLICLE.

1, Dermic coat of follicle; 2, Epidermic coat, or root-sheath. A, Outer layer of dermic coat, with blood-vessels B B; C, Middle layer; D, Inner or hyaline layer; E, Outer root-sheath; F, G, Inner root-sheath; H, Cuticle of root-sheath; I, Hair.

which resides in the cortical portion chiefly, but also in the medulla, to both of which it is supplied by the bulb, and like all other bodily functions this one of the hair-bulb may be atrophied, with the result that the hair loses its colour. Great nervous excitement predisposes to atrophy; so nervous stimulus, as by the use of pilocarpine, may restore the colour of hair.

The hair is supplied with fat-glands, the contents of which are by osmotic action carried right up the shaft of the hair, thus keeping it flexible and shiny. But this cannot be carried on indefinitely. Professor Shoemaker most appropriately says: 'A hair, exhausted as to the vitality of its root, perhaps from a root being called upon to maintain a stem too long for its capacity to nourish, slips from its follicle,' because the root shrivels, and leaves the papilla to reproduce another hair, as it will do unless it is a case of incipient baldness. It is universal in nature that a stimulus from without may invigorate activity within, and it is upon that ground that the collection of formulas in this chapter has become possible; but it is necessary that those who compound and retail these preparations should appreciate the fact that the hair to which they are applied is a part of the living body, and that their possibilities are limited by the natural functions.

DISEASES OF THE SCALP AND BEARD

These are among the commonest affections for which the chemist's advice is sought. The public have an impression that the troubles are not serious enough to warrant the calling-in of medical advice, and yet, trivial as some of them are from the point of view of general health, they are most annoying to those afflicted, and a source of great discredit to the medical adviser who fails to diagnose and treat them properly. In most of them, if a correct diagnosis is made, the treatment is comparatively easy, although it has frequently to be somewhat prolonged. The object of the following notes is to give those who put up hair-preparations a general idea of these troubles and the approved methods of treatment.

Seborrhœa Capitis

In its mild form of dandruff this ailment is well known. The affection is not so common in children as in adults, and in children if any decided scaliness of the scalp is found, ringworm should at once be thought of. It should also be remembered that a neglected dandruff frequently produces a general inflammation, not only of the scalp, but also of the face and body (seborrhœic dermatitis), and that the treatment of the face and body condition is made much easier by the previous cure of the scalp-condition. The treatment of mild forms is simple and effective; the head should be washed frequently with a Fluid Soap, made by mixing 2 parts of sapo mollis with 1 part of rectified spirit, suitably perfumed, and washing with plenty of warm soft water afterwards, so as to free the scalp from any trace of the soap. The following ointment should then be well rubbed into the scalp:—

Sulphuris præcipitati . . .	gr. xv.
Acidi salicylici	gr. xv.
Paraffini mollis	℥j.

Misce.

If greasy applications are disliked, the following lotion may be substituted; it is of proved excellence:—

Acidi salicylici	ʒij.
Olei ricini	ʒiij.
Aq. coloniensis	℥j.
Spt. rectificat. ad	℥vj.

Misce.

To be sprinkled over the head from a sprinkler bottle and well brushed in, or sprayed into the roots of the hair.

In both cases the essential thing to impress on the sufferer is that the medicament must reach the scalp, and that it is not enough simply to rub it over the hair. If the affection has spread to the face or trunk the same applications may be used, but if a large surface is affected they should be weaker; and it should be remembered that salicylic acid when rubbed in over

a large surface may be absorbed and cause toxic symptoms. In very chronic cases the following lotion is extremely useful :—

Sulphuris præcipitati	ʒiv.
Glycerini	ʒij.
Aquam ad	ʒiv.

Misce.

To be daubed into the roots of the hair with a shaving-brush, after the head has been washed with the fluid soap. It should be left on for a day or two, and the head again washed, the process being repeated as often as necessary.

Some cases are extremely refractory and liable to constant relapses. In these great perseverance is necessary for a complete cure to be effected. As seborrhœa is now looked upon as one of the most common causes of Premature Baldness, it should not be difficult to impress customers with the necessity for patience and persistence. Most dermatologists regard the disease as bacterial in origin, the specific microbe being the *Morococcus* of Unna, an organism which takes its name from its occurring in mulberry-like masses. This sets up an inflammatory process in the sebaceous glands, which leads to increased and perverted secretion, accompanied by excessive formation of the scales which form the horny layer of the skin. Salicylic acid acts by removing the excess of horny layer, and sulphur acts as a bactericide.

Tinea Tonsurans, or Ringworm of the Scalp

In the United Kingdom this trouble is generally caused by the fungus known as *Microsporon Audouini*. The disease manifests itself as small, more or less circular, patches partly denuded of hair, the hairs that are left in the patch presenting a typical twisted, bent, and 'stubbly' appearance. The skin of the patch is usually scaly, and there may or may not be the red ring which one associates with ringworm in other situations. If one of the diseased hairs be pulled out and mounted in a drop of liq. potassæ, the filaments and spores of the fungus may be seen ensheathing the hair. The air-bubbles

often found in hairs must not be confounded with spores. In doubtful cases, and in cases where the microscope is relied upon for diagnosis, it is advisable to dip the hair in ether, stain for fifteen minutes in a 5-per-cent. solution of carbolic acid and gentian-violet, immerse for a few minutes in Gram's solution, and mount in a drop of aniline oil which has been coloured to a light brown with iodine. The disease is practically confined to children under fifteen, and is sometimes so troublesome to cure completely that some dermatologists will never give a certificate that a child is free from it, limiting themselves to the statement that they cannot find any trace of it. It usually dies out about puberty, even if untreated. The best way to find if a scalp is cured is to rub over the suspicious places with a little chloroform on cotton wool, when any diseased hairs remaining will appear white.

Treatment.—Numerous methods have been recommended for the cure of ringworm of the scalp. Some of the drugs used, such as iodine, croton oil, and chrysarobin, act indirectly by stimulating the tissues and so enabling them to throw off the disease; others, such as sulphur, salicylic acid, carbolic acid, and mercurials, act directly as fungicides. Unless the case can be kept under very careful observation, the treatment had better be confined to the latter class; a very effective ointment may be made up as follows :—

Sulphuris præcipitati . . .	ʒss.
Hydrargyri ammoniati . . .	ʒss.
Acidi salicylici	gr. xx.
Adipis lanæ	℥ss.
Paraffini mollis	℥ss.

Misce.

The hair should be cut round the affected patches, the diseased hairs in sight pulled out, and the ointment *rubbed well in* for ten minutes twice daily; the scalp should be well washed with warm water and some antiseptic soap twice a week. It is essential that the rubbing-in process be thorough, and it may be necessary in very persistent cases to shave the

whole scalp—indeed, some eminent authorities decline to treat a case unless this is done preliminary to treatment; it materially lessens the period of cure and enables every focus of disease to be seen and watched. Months of treatment may be necessary before a cure is effected, and it is as well to warn the child's parents of this beforehand, giving them the choice of shaving as tending to a more rapid cure. They should also be warned to keep towels, combs, &c., specially for the patient, as the disease is extremely infectious, and much more easily prevented than cured.

Tinea Barbæ, or Ringworm of the Beard

This may show itself as the usual ringed patch so familiar on the skin, in which case the diagnosis and cure are fairly easy; or the disease may have penetrated more deeply, in which case we have swollen, red, nodular, and painful areas, which, if they have become infected with pus-producing organisms, may show pustulation and be difficult to distinguish from sycosis. The distinction is best made by trying to pull out some hairs on the infected patch, when it will be found that the ringworm-infected hairs come out quite readily, while in the other case they do not. The treatment of the nodular form consists in pulling out all the hairs on the infected patch with a pair of epilating forceps, and rubbing in ung. cupri oleat. 10 per cent. In the milder ringed form epilation may be dispensed with and a rapid cure usually effected with ung. hydrarg. ammon.

Alopecia Areata

Alopecia is the technical term for baldness, and *Alopecia areata* is baldness in patches, as the disease is characterised by a falling-out of the hair from areas on the scalp, or, indeed, anywhere on the body. The bald spots first developed may increase in size and number until the whole scalp, or even the whole body, is denuded. The cause has long been a subject of dispute among specialists, and is not yet by any means settled.

The nervous system, ringworm fungus, and bacteria have all been made responsible by equally eminent specialists, but the evidence for a specific bacterial origin seems to be accumulating—the most striking, perhaps, being the epidemics which have on one or two occasions broken out in girls' schools after the introduction of a pupil suffering from the disease. The diagnosis is easily made, from the round patches, the smooth skin, the absence of evidence of ringworm, and the presence at the borders, or even in the patches, of hairs like a point of exclamation.

Treatment.—In young people, any treatment, whether antiseptic or stimulating, will probably be effective, as the disease in many cases tends to cure itself, although the period of cure can be materially lessened by treatment. After forty, on the other hand, the prognosis is extremely bad. The following two prescriptions are useful for general practice :—

Acidi lactici	ʒiij.
Olei ricini	ʒij.
Aq. lavandulæ	ʒss.
Spt. rectificat. ad	ʒiv.

Misce.

This should be rubbed into the bald places, very gently at first, but more vigorously as the scalp gets accustomed to it.

Liq. ammon. fort.	ʒss.
Chloroformi	ʒss.
Ol. olivæ	ʒss.
Spt. rosmarini ad	ʒiv.

Misce.

This also should be rubbed in cautiously until the scalp gets accustomed to the application. Ung. sulphuris and mercuric chloride ($\frac{1}{2}$ to 2 per cent. in S.V.R.) have their adherents, but the last must be used cautiously on large surfaces on account of the risk of absorption. Any general condition of ill-health apparent in the patient must of course be treated at the same time. It sometimes takes a year or two before the hair grows again, and of course it grows patchy until it is all long enough to be trimmed, with slight variations in colour.

Impetigo Contagiosa

This disease is common on the face, upper limbs, and scalp of children. When it first comes under observation it is seen as patches of honey-yellow crusts. It is extremely infectious, and has been variously known as 'scrum-pox,' 'football-itch' and 'run-around.' It is now believed to be caused by a streptococcus, which first produces little blisters on the skin; these blisters rapidly become pustules from secondary infection with the staphylococci which normally inhabit the skin, and the pustules in turn dry up to form the crusts which are the distinctive feature of the disease. If untreated it tends to spread indefinitely, but, fortunately, it is quite easily checked. The crusts must first be got rid of either by soaking with oil or, better, by the use of boricised starch poultice. After their removal the following ointment should be rubbed in several times a day, the head being well washed after a few days of this treatment:—

Hydrargyri ammoniati . . .	gr. v.
Paraffini mollis	ʒj.

Misce.

This ointment is much more effective than one stronger in mercury. The Starch Poultice is made as follows:—

Mix one teaspoonful of boric acid with four tablespoonfuls of cold-water starch; make into a paste with cold water, then pour in one pint of boiling water. When cold, spread thickly on calico, cover with muslin, and apply, renewing every two hours.

The same treatment applies to impetigo of the beard.

Pediculosis Capitis

is the name given to the condition of the scalp produced by the ravages of *Pediculus capitis*. In bad cases masses of crusts are found and the hair is matted; the crusts are distinguished from those of impetigo by their being more continuous, and by their dirty greenish colour. The pediculi and their ova are generally pretty much in evidence, the latter to be distinguished from the scales of dandruff by the fact that they

are firmly glued to the hairs. The condition is generally most marked on the back of the head, and may give rise to enlarged glands at the back of the neck or in front of the ear. If the glands do not actually suppurate, they generally subside with the cure of the condition, and for this purpose there is nothing so effective as common paraffin oil (suitably coloured and perfumed). Even if the scalp is in a very irritable condition it is astonishing how well it tolerates this apparently heroic remedy; the whole scalp and hair should be well soaked in the oil, and a bathing-cap worn for a night, the head being well washed with soft soap and warm water the following morning. The patient should, of course, be warned to keep away from lights while under treatment. It may be necessary to treat a second time, but after the first treatment, if all the nits have not been removed, they may be loosened by sponging with a lotion of acetic acid 1 in 4, and then removed by combing the hair with a small-tooth comb.

Favus

This disease of the hair-follicles and hair is caused by a fungus known as *Achorion Schonleinii*. It is much more common in Scotland and France than in England, where it is somewhat rare. Cats and mice are said to be responsible for its spread. It appears on the scalp as little sulphur-yellow cups or scutula; the affected head has a mousy smell. It is, unless taken very early, extremely difficult to cure, and the first essential to treatment is to pull out all the affected hairs, afterwards applying a 10-per-cent. oleate-of-copper ointment, or the following ointment:—

Cupri sulphatis	ʒj.
Lanolini	ʒiij.
Vaselini	℥ss.

Misce.

The method of epilation resorted to nowadays is by exposure to the *x* rays, which causes all the diseased hairs to fall out in a few weeks, the disease being then much more readily cured by the ointments mentioned.

Sycosis

is a disease of the beard region which is characterised by the appearance of pustules around the hair-follicles: it is not to be confused with the old sycosis menti, which is ringworm of the beard. It appears to be caused by a particularly virulent strain of staphylococcus, communicated by a dirty razor or shaving-brush. It is distinguished from ringworm by the fact that in the latter there are the deep nodules already mentioned, with hair growing on them which is easily pulled out. Impetigo generally develops more rapidly, and the crusts are distinctive. The injection of staphylococcus vaccine is now frequently resorted to in sycosis: a cure usually follows speedily. Failing this, prolonged treatment may be necessary. If the irritation is very great, it is probably better to clip the beard close, but, on the whole, if the patient is sufficiently heroic, a quicker cure will be effected if shaving is persisted in. All hairs surrounded by pustules should be pulled out, and an antiseptic ointment rubbed well in: the sulphur and ammoniated mercury ointment recommended for ringworm answers well, or 10-per-cent. copper oleate may be used, or the following:

Ung. hydrarg. nit. . . . . ℥j.
Ung. zinci . . . . . ℥j.
Misce.

The use of *x* rays to effect epilation before the application of ointments shortens the treatment materially, but there is often a very considerable reaction, and the greatest care has therefore to be observed. Very obstinate cases sometimes yield to blistering with liq. epispasticus, or to double-strength liq. hydrarg. perchlor., which also may produce blistering. The beard should not be allowed to grow for at least a year after all trace of the disease has disappeared, or it will most certainly return.

CARE OF THE HAIR

The beauty of the hair and its permanence on the scalp greatly depend on the care bestowed upon it. It should be combed and brushed at least twice a day. Women especially,

who subject their hair to great strain owing to the methods of dressing it, should give the roots a rest morning and evening by gently combing the hair with a large rake comb. Men as a rule require little instruction in this respect, and they are so frequently in the hands of hairdressers that they are informed of the condition of the scalp should it become suspicious in appearance. The ordinary modern man, who takes his morning bath regularly, rarely neglects to place the bath-sponge on the top of his head, and this wash suffices to keep the hair clean. But in many cases washing leads to a dry state of the hair, if it is not dressed immediately after with some oily preparation according to its nature. As a rule brilliantine suffices, but the requirements vary, so that for some men a pomade is really necessary. Sufficient variety of formulas will be found in the following pages, and the retailer should keep in mind that it frequently pays to select, and prepare specially for certain customers, a dressing that will suit their condition.

HAIR-DRESSINGS

Stock Pomade

Lard	lb. iv.
Yellow wax	ʒiij.
Palm oil	ʒj.
Water	ʒv.
Oil of bergamot	ʒj.
Oil of lemon	ʒss.
Oil of cloves	ʒij.

Melt the lard, wax, and palm oil and strain, stir occasionally, and add the water in the manner of making cold-cream. When nearly cold add the perfumes.

Benzoated

Benzoated lard	lb. ij.
Oil of jasmine	ʒiiss.
Otto of rose	ɱv.
Oil of orris	ɱj.
Coumarin	gr. j.
Alkannin	gr. viij.

This is the better for the addition of Japan wax 2 oz., which should be melted with 6 oz. of the benzoated lard in a large pot, and the rest of the lard added bit by bit without increasing the heat much. Then remove, add the perfumes, and stir till half-hard.

Snow-white Pomade

To make a cheap snow-white pomade omit the colouring-matters from either of these formulas, and to each pound add

Curd soap	ʒss.
Borax	gr. v.
Water	ʒvj.

Dissolve by the aid of heat. Beat up this solution thoroughly with the pomade before it cools.

Household Pomade

Liquid paraffin	ʒxxiv.
White ceresine	ʒviij.

Melt together, allow to cool slowly, stirring the while; then add

Oil of bergamot	ɱlxxx.
Oil of bitter almonds	ɱxxx.
Oil of lemon	ɱxv.
Oil of cloves	ɱxv.

Mix well.

Cantharidine Pomade

I

Benzoated lard	℥viij.
Vaseline	℥viij.
Yellow wax	℥j.
Peruvian balsam	℥ss.

Digest on a water-bath for ten minutes, strain, and stir constantly until of a creamy consistency; then add

Cantharidin, in fine powder	gr. j.
Acetic ether	℥iij.
Otto of rose	♏viij.
Oil of bergamot	℥ss.

Dissolve the cantharidin in the ether. Mix well.

Instead of cantharidin, pulv. cantharid. ℥ij. may be used. Heat it with the fats for half an hour and omit the acetic ether.

II

Ol. olivæ	℥viij.
Adipis	℥vij.
Ceræ flavæ	℥j.
Ol. bergamot.	℥iij.
Ol. caryoph.	♏XL.
Ol. lavand. ang.	♏XL.
Ol. amygd. essent.	℥ss.
Acet. cantharid.	℥iv.
Pulv. cambogiæ	℥ss.

Melt the first three ingredients on a water-bath. In this melted mixture digest the gamboge, and strain. When creamy, add the vinegar, stirring constantly to mix, and finally the perfumes.

Castor-oil Pomades

I

Pale castor oil	℥xvj.
Olive oil	℥xij.
Jasmine pomade	℥xx.
Violet pomade	℥xx.

Melt the pomades with a gentle heat and stir in the oils.

The floral pomades are to be used. The product is exceptionally fine; but if considered too soft, add to it 2 oz. of picked yellow wax.

II

Castor oil	℥xvj.
White wax	℥iv.

Melt, stir, and add

Oil of bergamot	℥iiss.
Mitcham oil of lavender	℥ss.

Stir well until set.

III

Castor oil	℥viij.
Vaseline	℥ij.
Yellow wax	℥iss.

Melt all together, stir constantly as it cools, and when creamy add perfume.

IV. Transparent

Cetacei	℥ij.
Ol. ricini pal.	℥v.

Melt and add gradually with constant stirring

Spt. vin. rect.	℥v.

Then add

Ol. bergamot.	♏xxx.
Ol. neroli	♏iv.
Ol. caryoph.	♏iv.
Ol. verbenæ	♏iv.
Ol. rosæ	♏iv.

Mix and fill into bottles previously warmed.

It is not, of course, necessary to call these castor-oil pomades. They may carry any fanciful name.

Circassian Cream

Benzoated lard	℥xvj.
Prepared lard	℥xvj.
Yellow wax	℥iij.
Almond oil	Oj.
Rose pomade	℥vj.
Otto of rose	℥j.
Alkannin	gr. j.

Melt the wax and the lards, dissolve the alkannin in the oil, and add to the hot mixture; stir until dissolved, then add the rose pomade and the otto, again stir, and bottle.

Cocoa-oil Pomade

I

Take any convenient quantity of cocoanut oil—say, 1 lb.—and melt by the heat of a water-bath. Strain and stir well, so that the fat may set in minute granules. While cooling, add

Oil of pimento	♏x.
Oil of cloves	♏x.
Oil of bergamot	ʒss.
Oil of mace	ʒss.

Mix.

This keeps nicely, and sells more profitably than plain cocoanut oil.

II

Cocoa butter	ʒvj.
Castor oil	ʒxxxij.

Melt and add

Oil of rose-geranium	ʒj.
Oil of orange	ʒiss.
Tincture of turmeric	ʒij.

Stir constantly until cold.

Nut oil may be used in place of castor oil, but in the proportion of 4 to 1 of the cocoa butter.

Crystallised Pomade.—In order to obtain a pomade with the appearance of large crystals it is necessary that it should cool very slowly. The pomade-bottles previous to filling should be placed up to the necks in a basin of warm water, then filled, and allowed to remain until thoroughly set. Second in importance is the necessity of entire absence of solid fats, such as palm oil, lard, &c., if the pomades are to be free from opacity. If it is desired to have the pomade of a golden colour, the almond oil (or any other oil used) should be coloured with gamboge, or any of the golden colourings advertised.

I

Ol. ricini	ʒviij.
Ol. amygdal. dulc.	ʒviij.
Cetacei	ʒij.
Ol. bergamot.	ʒij.
Ol. lavand. ang.	ʒiss.
Ol. jasmin.	gtt. viij.
Ol. violæ	gtt. viij.
Ol. rosæ virgin.	gtt. viij.

Melt the spermaceti and add the fixed oils, warming gently only. Add the perfumes. Place the bottles for the pomade in a shallow dish containing warm water. Fill the bottles with the pomade and allow to stand until cold without disturbing them in any way.

This formula is rather strong in perfume. We have found a fourth of the bergamot and half the lavender to be sufficient.

II

Almond oil	ʒxxiv.
Castor oil	ʒviij.
Spermaceti	ʒiv.

Melt and add

Oil of verbena	ʒss.
Oil of cassia	ʒss.
Oil of bergamot	ʒj.
Oil of cloves	♏x.
Otto of rose	♏ij.

Stir well, pour into bottles, and cover.

III

Castor oil	ʒv.
Olive oil	ʒiv.
Spermaceti	ʒvj.
Oil of neroli	♏iv.
Oil of lemon	♏viij.

Proceed as in the above. (Requires 1 oz. spermaceti in summer.)

IV

Castor oil	℥xvj.
Olive oil	℥xij.
Spermaceti	℥iiiss.
Oil of jasmine	℥v.
Otto of rose	♏viij.
Oil of bergamot	♏viij.
Oil of neroli	♏iv.
Oil of rose-geranium	♏ij.
Oil of orris	♏j.
Coumarin	gr. j.
Heliotropin	gr. iij.

V

Olive oil	℥xxv.
Palm oil	℥ij.
Spermaceti	℥v.
Oil of bergamot	℥ss.
Oil of neroli	℥ss.
Oil of cloves	℥ij.
Oil of lemon	℥ss.

Prepare Nos. II. to V. in the manner described.

Crystallised Lime Cream

Castor oil	℥xvj.
Pale almond oil	℥viij.
Spermaceti	℥iij.
Oil of lemon	℥ij.

Proceed as in the foregoing. Bleached almond oil is apt to be rancid, but is necessary for this pomade because it must be quite white.

Dupuytren's Pomade

Marrow	℥x.
Olive oil	℥vj.
Peruvian balsam	℥j.
Acetate of lead	℥ij.
Tincture of cantharides	℥ij.
Oil of bergamot	℥j.
Oil of cloves	℥j.

Make a pomade.

Lanoline Pomade

Anhydrous lanoline	℥ij.
Vaseline oil	℥xj.
Ceresine	gr. lxxv.
Distilled water	℥j.

Melt the ceresine in the oil by the heat of a water-bath, add the lanoline, and mix the water intimately with the whole. Perfume.

Macassar Pomade

Castor oil	℥x.
Suet	℥ij.
Spermaceti	℥j.
Oil of nutmeg	℥ss.
Oil of sweet marjoram	℥ss.
Oil of rosemary	℥ss.
Otto of rose	♏xv.
Oil of rose-geranium	♏x.
Alkanet-root	sufficient to colour

Melt the spermaceti and suet, adding the castor oil (previously coloured by digesting with alkanet), and, lastly, add, when nearly cold, the perfumes, which in this case are also the medicaments.

Marrow Pomade

I

Beef marrow	℥xvj.
Beef suet	℥viij.
Palm oil	℥viij.

Heat them together on a water-bath for half an hour, then strain with pressure and perfume suitably.

II

Prepared lard	lb. iv.
Prepared suet	lb. ij.
Oil of lemon	℥j.
Oil of bergamot	℥ss.
Oil of cloves	℥iij.

Melt the fats and add the perfumes.

III

Beef marrow, lard, castor oil, and olive oil, of each	℥vj.
Powdered gamboge	℥iss.
Perfume	a sufficiency

Proceed as in No. I. Needs yellow wax 2 oz.

IV

Almond oil	℥xvj.
Marrow	℥x.
Jasmin pomade	℥ij.
Rose pomade	℥ij.
Orange pomade	℥ij.
Oil of lemon	℥ij.

Prepare as No. II. with wax 3 oz.

Children's Pomade

(Parasitic or Nit Ointment)

I

Yellow wax	ʒix.
Lard	ʒvj.
Olive oil	ʒvj.

Melt and to the mixture add

Veratrine	gr. x.
Oleic acid	ʒss.

Previously rubbed together in a mortar. Stir well and perfume with

Oil of lemon	ʒj.
Oil of bergamot	ʒj.
Oil of verbena	♏v.

II

Stavesacre-seed, crushed	ʒv.
Olive oil	ʒxvj.

Heat the olive oil on a water-bath and add the crushed seed to it, digest for six hours and strain. Then add to the following melted mixture:—

White wax	ʒiij.
Benzoated lard	ʒiv.

Stir until it begins to thicken, and add

Oil of thyme	♏xx.
Oil of verbena	♏x.

Stir until cold.

Equal parts of sevadilla and stavesacre may also be used.

III

Powdered white hellebore	℥j.
Vaseline	ʒviij.
Oil of citronella	♏xv.
Chloroform	♏xv.

Mix thoroughly, or prepare like II.

The same base as I. may be used for pomades which are not scheduled poisons: For it use saponin ʒj., and for III extract of quassia ʒiij. and naphthalin ʒij. instead of the hellebore. The paraffin bases are said not to be so good for parasiticides as lard or oil and wax.

IV

Paraffin. dur.	ʒx.
Paraffin. mollis	ʒxxij.
Ol. staphisagriæ	ʒiv.
Ol. limonis	ʒij.
Ol. bergamot.	ʒij.

Cocoa-nut Pomade

Cocoa-nut oil	ʒxx.
Benzoin, in coarse powder	ʒj.

Digest together on a water-bath for two hours, and strain into the following, previously melted:—

White carnauba wax	ʒj.
White ceresine	ʒj.
Liquid paraffin	ʒv.

Perfume to please.

Nutritive Cream

Pomat. jasmin.	ʒss.
Pomat. rosæ	ʒss.
Pomat. aurantii	ʒss.
Ol. olivæ	ʒij.
Ol. ricini	ʒij.
Adipis	ʒiij.
Cetacei	ʒj.
Pulv. cambogiæ	℈j.
Ol. bergamot.	ʒj.

Melt the lard and spermaceti on a water-bath and digest the gamboge in the mixture; then add the olive and castor oils, strain, and add the floral pomades and the bergamot. Stir now and then till creamy.

Petroleum Pomade

Heavy petroleum oil	ʒix.
Ceresine	ʒj.

Melt together, stir constantly till cream-like, add perfume, and continue to stir until it sets.

This makes a capital pomade when nicely perfumed, and much nicer and less costly than mixtures of animal and vegetable fats.

Regenerative Pomade

Ol. olivæ	ʒxxiv.
Ceræ albæ	ʒiij.
Ol. palmæ	ʒiij.
Pomat. rosæ	ʒvj.
Pomat. jasmin.	ʒij.
Pomat. aurantii	ʒj.

Restorative Cream

Ceræ albæ	℥v.
Ol. amygdal. dulc.	℥xxvij.

Melt, and add when nearly cold

Ol. jasmin.	℥iv.
Otto rosæ	♏xx.
Ol. geranii	♏x.

M.

An expensive but excellent pomade.

Rose Pomade

Lard	lb. iij.
Spermaceti	℥iij.
Almond oil	℥iij.
Alkanet	℥ss.

Heat on a water-bath half an hour, first melting the spermaceti with the almond oil; then strain and add

Otto of rose	℥ss.
Oil of rose-geranium	℥ss.
Oil of bitter almonds	♏x.

Stir until it begins to set.

Strawberry Pomade

Cocoanut oil	℥xviij.
Almond oil	℥ix.
White wax	℥iij.
Fresh strawberries	℥iv.
Alkanet	℥ij.
Otto of rose	♏x.

Melt the first three ingredients on a water-bath and digest the strawberries and alkanet in the mixture for an hour; then drive off the remaining moisture at a temperature of 212° F.; strain, stir, and perfume.

Pomade Philocome

A mixture of 1 part of white wax and 9 parts of olive oil, perfumed.

Bear's Grease

I

A common yellow pomade (such as Stock Pomade) is the popular penny article.

II

Beef-marrow fat	℥xvj.
Palm oil	℥j.
Yellow wax	℥iss.
Castor oil	℥iv.

Melt, strain, and add

Oil of cassia	℥ss.
Oil of bergamot	℥ss.
Oil of rose-geranium	℥ss.

Mix.

III

Beef-marrow fat	℥ij.
Benzoated lard	℥ij.
Lard	℥x.
Jasmin oil	℥ij.
Otto of rose	♏v.
Oil of bergamot	♏v.
Coumarin	gr. ⅕
Ionone (10 per cent.)	♏j.

Melt the fats, add the perfumes, and pour into suitable containers.

Vaseline Pomades.—The basis consists of 6 to 8 parts of white vaseline (or more according to season) and 1 part of ceresine melted together, and while melting coloured with the substances undernoted according to the floral odour desired. The quantities of perfumes here given are for not less than 2 lbs. of the basis :—

Citron

Oil of lemon	℥iiss.
Oil of bergamot	℥ss.
Oil of lemongrass	℥ss.

Colour—Tincture of gamboge.

Heliotrope

Oil of cassie	℥ij.
Oil of bitter almonds	♏xl.
Oil of cinnamon	℥ss.
Peruvian balsam	℥ij.

Orange

Oil of orange-peel	ʒiiss.
Oil of bergamot	ʒss.
Oil of rose-geranium	ʒss.

Colour—Oil-soluble orange aniline, or oleaceous butter-colouring.

Reseda

Oil of bergamot	ʒij.
Oil of bitter almonds	ʒiss.
Oil of neroli	ʒj.
Oil of ylang-ylang	♏xv.

Colour—Chlorophyll.

Virginia Pomade

White vaseline	ʒxiiss.
White wax	ʒj.
Powdered benzoin	ʒj.
Peruvian balsam	ʒij.

Digest on a water-bath for a few hours, then strain, and add bergamot oil ʒj. and otto of rose ♏x.

Rose

Oil of rose-geranium	ʒss.
Oil of bergamot	ʒiss.
Oil of neroli	ʒss.

Colour—Alkanet.

Walnut Pomade

Extract of walnut-leaves	ʒiij.
Benzoated lard	ʒv.
Perfume	a sufficiency

Mix.

NOTE.—Ext. jugland. fol. is a proof-spirit extract of walnut-leaves, ext. jugland. nuc. a boiling-water extract of the unripe shells. Either may be used, or the pomade may be made from the shells in the same way as the oil. *See* p. 92.

High-class Floral Pomades.—These, it will be seen, are compounds of the floral pomades. For odour they are the finest possible preparations, but in price are only suited for high-class trade. Cheaper preparations may be made with the fatty residue left after making spirit-perfumes from floral pomades; in fact, these residues should always be utilised in this way.

Heliotrope

Vanilla pomade	lb. iij.
Rose pomade	lb. j.
Jasmine pomade	lb. ij.
Tuberose pomade	lb. j.
Essence of vanilla	ʒj.
Essence of ambergris	ʒj.
Essence of musk	ʒss.
Oil of cloves	ʒj.

Melt the pomades and add the perfumes, stirring occasionally until cold.

Hyacinth

Tuberose pomade	lb. ij.
Orange-flower pomade	lb. j.
Hyacinth pomade	lb. j.
Reseda pomade	ʒviij.
Jasmine pomade	ʒviij.
Oil of rose (floral)	ʒiiss.

Jockey Club

Rose pomade	lb. ij.
Heliotrope pomade	lb. ij.
Jasmine pomade	lb. j.
Orange-flower pomade	lb. j.
Cassie pomade	lb. j.
Tuberose pomade	lb. j.
Oil of bergamot	ʒiiss.
Oil of rose-geranium	ʒiiss.
Oil of cloves	ʒj.

Jonquil

Orange-flower pomade	lb. j.
Tuberose pomade	lb. ij.
Cassie pomade	lb. j.
Jasmine pomade	lb. iij.
Essence of musk	ʒj.
Essence of ambergris	ʒij.
Essence of Peruvian balsam	ʒij.
Tincture of storax	ʒiij.

Lily of the Valley

Rose pomade	lb. ij.
Reseda pomade	lb. ij.
Tuberose pomade	ʒviij.
Jasmine pomade	ʒviij.
Otto of rose	♏x.
Oil of bergamot	♏x.
Oil of ylang-ylang	♏xv.
Terpineol	♏vj.

Violet

Orange-flower pomade	lb. ij.
Reseda pomade	lb. j.
Jonquil pomade	ʒviij.
Tuberose pomade	ʒviij.
Essence of ambergris	ʒij.
Oil of neroli	♏vj.

The pomades in each case should be melted together by the heat of a water-bath, and while the mixture is cooling the perfumes should be added.

Pomade Perfumes

I

Oi of citronella	ʒij.
Oil of bitter almonds	ʒij.
Oil of sandalwood	ʒij.
Oil of rosemary	ʒij.
English oil of lavender	ʒvj.
Oil of verbena	ʒvj.
Oil of bergamot	ʒiij.
Oil of lemon	ʒvj.

Mix.

Use ʒij. of this to each pound of pomade.

II

Ol. origani	ʒj.
Ol. caryoph.	ʒj.
Ol. lavand.	ʒj.
Ol. citronellæ	ʒiv.
Ol. amygd. amar.	ʒij.
Ol. cassiæ	ʒiv.
Ol. limonis	ʒiv.
Ol. bergam.	ʒiv.
Ol. jasmin.	ʒj.

M.

III

Essence of raspberry	ʒj.
Oil of cinnamon	♏xx.
Oil of citronella	♏xxv
Oil of rose-geranium	♏xv.
Oil of bergamot	♏xx.
Peruvian balsam	♏xv.

Mix.

IV

Oil of bergamot	ʒx.
Oil of lemon	ʒiiss.
Oil of lavender	ʒj. ♏xl.
Oil of neroli	ʒj. ♏x
Oil of rose-geranium	♏l.
Oil of cinnamon	♏xx.
Oil of wintergreen	♏x.
Oil of ylang-ylang	♏v.
Otto of orris	gtt. ij.
Vanillin	gr. ij.
Coumarin	gr. iss.
Heliotropin	gr. ij.
Musk	gr. ij.

Mix.

Pomade Colourings

Yellow is the colour most commonly required for pomades. A preparation for cheap retail need not be coloured with anything else than palm oil, for although that colour bleaches somewhat rapidly on exposure, it is sufficiently permanent for a quick turnover, and is harmless. Gamboge gives a very pretty colour: it may be used as a tincture (one to five of rectified spirit), but it suffices to

digest from 4 to 6 dr. of the powder in a pint of oil for an hour, then strain. This may be used immediately, or as required. Very pretty shades, from cream to orange, are obtained by the use of an oleaceous butter-colouring, or oil-soluble aniline-orange, commonly known as 'butter yellow.' Safranine is one of the colours specially recommended : it is an azo colour. One part of safranine is dissolved in a mixture of 20 parts of S.V.R. and 80 of water, and sufficient of it used. The colour is permanent, and is not destroyed by borax or similar substances. Palmaphyll is another good golden colour.

Pink and Red are tints which alkanet very readily gives, and we cannot name a dye so well known and so generally useful. It is advisable to keep the colour ready prepared by macerating the bruised dye in olive oil for a fortnight and straining. Two ounces to a pint of oil suffices. Use enough of the red oil to give the tint of colour desired. Alkannin, the colouring principle, is also obtainable, as well as oil-soluble red anilines. A different tint is obtained with ammoniacal solution of carmine.

Green is a colour seldom required for pomades. The best is made by digesting 4 oz. of fresh spinach in a pint of oil or a pound of lard on a water-bath until the spinach is crisp, and all moisture has been dissipated, and then straining. The same colour is more readily obtained by dissolving a sufficiency of chlorophyll in oil, lard, or pomade basis, to give the tint desired (*see also* Green Oil, p. 91).

HAIR OILS

The popularity of oils and pomades as hair-dressings is not what it used to be, change of fashion and change in taste having created a demand for less greasy applications, especially for brilliantines, or 'fixers' which can readily be washed off. The fixed oils used as the basis for hair oils should not be of the drying class, and it is that characteristic which makes rape and sesame oils, and even cottonseed oil, so objectionable. They become sticky on the hair ; but as we never hear of that

objection, except in regard to the very cheapest articles, the oils mentioned need not be further considered here. Olive oil, almond oil, oil of apricot or peach kernels (ol. amygdal. persic. and ol. pruni armeniac.), and the so-called vaseline oil (*Paraffinum liquidum*, B.P.) are the fluids most readily obtainable by druggists and best adapted for hair-dressings. Castor oil, either *per se* or in mixture, is not at all nice.

Fine hair oil of the nature of *Huile Philocome* is made by mixing benzoated oil with perfumed oils prepared direct from the flowers by maceration. Equally fine are the oils compounded according to the following recipes. Benzoated Oil is made by digesting an ounce of bruised benzoin (Siam preferably) in a pint of almond or olive oil for three hours on a water-bath, and filtering through French grey paper. Oil so prepared does not become rancid.

Heliotrope

Benzoated oil	ʒxxx.
Heliotropin	ʒss.

Dissolve by a gentle heat.

Jasmine

Benzoated oil	ʒx.
Jasmine oil (floral)	ʒx.
Oil of cloves	ɱx.
Oil of bergamot	ʒss.
Otto of rose	ɱv.
Oil of orange-flowers	ɱxx.
Oil of thyme	ɱj.

Mix.

Rose

Benzoated oil	ʒxx.
Otto of rose	ɱxx.
Oil of rose-geranium	ɱx.

Mix.

Violet

Benzoated oil	ʒx.
Violet oil (floral)	ʒiiss.
Otto of rose	ɱij.
Oil of cinnamon	ɱiij.
Oil of cloves	ɱvj.
Oil of bergamot	ɱxij.

Mix.

Ylang-ylang

Benzoated oil	ʒxxx.
Oil of ylang-ylang	ɱxl.
Oil of neroli	ɱv.
Otto of rose	ɱxx.

Mix.

Other Odours

Mix 1 part of any floral oil with 4 parts of benzoated oil.

Three parts of any of the foregoing oils and one part of absolute or 95-per-cent. alcohol make excellent *Brilliantines*.

Macassar Oil.—Alexander Rowland's 'Essay on the Human Hair' (1816) is an amusing book, and does not explain the mystery that hangs over the composition of his famous compound—which has made poets sing and added a word (antimacassar) to the English language. There is an

old fable that the chief component of the preparation is oil of ben, an oil obtained from the seeds of *Schleichera trijuga*, Willd., by expression or by boiling the bruised seeds in water and skimming off the oil which rises to the surface. This oil was, according to Mr. Robert Glenk, formerly imported into the United States, but latterly what found its way there was composed of cocoanut oil in which the blossoms of ylang-ylang, *Cananga odorata*, or of the false ylang-ylang, *Michelia Champaca*, had been digested. Now, ordinary oils under the same name, suitably perfumed and frequently coloured red with alkanet, have entirely replaced the natural product. Mr. Glenk received a small sample of true oil of ben from Mirzapore, and found that at the ordinary temperature it is semi-solid, of a yellowish-white appearance, with a weak odour of bitter almonds. It has a mildly acrid taste and an acid reaction to litmus-paper. It is completely liquefied at 82°.F., and solidifies at about 50° F. The oil has a specific gravity of 0·942.

A formula for preparing a so-called 'macassar oil for the hair,' which has given great satisfaction to those who have used it, is the following :—

Castor oil	ʒxvj.
Rectified spirit	ʒiij.
Oil of nutmeg	ɱxxx.
Oil of rosemary	ɱx.
Oil of sweet marjoram	ɱx.
Oil of neroli	ɱx.
Otto of rose	ɱxx.
Essence of musk	ʒj.
Alkanet	sufficient to colour

Mix.

The following are other examples of formulas recommended :

Olive oil	ʒxxxij.
Alkanet	ʒij.
Oil of lemon	ʒss.
Oil of cinnamon	ɱxv.
Oil of cloves	ɱxv.
Otto of rose	ɱv.

Colour the olive oil by digesting the alkanet in it for an hour on a water-bath, filter, and add the perfumes.

II

Olive oil	ʒxxxij.
Alkannin	ʒj.
Oil of cinnamon	ɱxv.
Oil of cloves	ɱxv.
Oil of rose-geranium	ɱxx.
Oil of bergamot	ɱv.
Otto of rose	ɱv.

Dissolve the alkannin in the olive oil and mix with the other ingredients.

III

Benzoated oil	ʒvj.
Alkanet	ʒiiiss.
Cassia-buds	ʒiiss.
Oil of cinnamon	ɱxx.
Otto of rose	ɱviij.
Oil of bergamot	ɱiv.
Oil of bitter almonds	ɱv.

Digest the alkanet and cassia-buds in the oil as in No. I., filter, and add the perfumes.

IV

Benzoated oil	ʒviij.
Alkannin	℈j.
Oil of bergamot	ʒss.
Oil of lemon	ɱxx.
Oil of cinnamon	ɱij.
Essence of musk	ɱij.

Mix similarly to No. II.

Burdock-root Oil

Rad. bardanæ	ʒv.
Ol. olivæ	ʒxvj.

Cut the root small and digest with the oil for a few days, then filter and add

Ol. bergamot.	ʒiij.
Ol. geranii	ʒj.
Ol. limonis	ʒiss.

M.

Cantharidin Oil

Cantharidin	gr. j.
Acetone	ɱxl.
Apricot-kernel oil to	ʒij.

Dissolve the cantharidin in the acetone, add the nut oil, and perfume.

Green Oil

This can be made from grass as well as spinach. Crush the grass, say a good handful, and press out as much of the juice as possible. Macerate in as much rectified spirit as will cover it for a day, press, filter, and shake up the filtrate with its own volume of olive oil. The oil takes up the green colouring matter. Decant the spirit and reject it.

Oil-soluble chlorophyll is now obtainable as a paste, and this is so convenient as almost to exclude such processes as that just described. Oil-soluble aniline-blue is also used to give to olive oil a green colour.

Mexican Hair Oil

Ol. olivæ	lb. j.
Rad. anchusæ.	ʒiiss.

Digest until well coloured, filter, then add

Ol. limonis	ɱxxiv.
Ol. cinnamom.	ɱxv.
Ol. caryoph.	ɱxv.
Otto rosæ	ɱvj.

M.

Cinchona Oil

Powdered cinchona	ʒiv.
Water	ʒviij.

Digest on a water-bath for an hour, then add

Olive oil. Oij.

and continue digestion until all water has evaporated. Filter and add

Alkannin	ʒij.
Oil of bergamot	ʒiv.
Oil of lemon	ʒij.
Otto of rose	ɱviij.
Oil of neroli	ɱiv.
Oil of cinnamon	ɱj.

Mix.

Nursery Hair Oil

Benzoin	ʒss.
Alkannin	ʒss.
Oil of stavesacre	ʒj.
Almond oil	Oj.

Macerate for a week, shaking daily, filter, and add

Oil of ylang-ylang	ɱxx.
Oil of neroli	ɱx.

Mix.

A 4-oz. bottle of this oil retails at 1s. (*See also* VII., p. 109.)

Vegeta le Hair Oil

Benzoated oil	ʒxij.
Otto of rose	ɱxx
Oil of bergamot	ʒj.
Green oil	ʒss.

Mix.

Walnut Oil

Fresh walnut-shells . . ℥ij.
Benzoated oil . . . ℥x.

Crush the walnut-shells (gathered preferably at the end of August or beginning of September) and rub to a smooth paste. Digest this in the oil on a water-bath until all the moisture is dissipated, filter, and add

Otto of rose . . . ♏iv.
Oil of neroli . . . ♏viij.

This oil is a true dye, imparting a fine brown shade to grey hair when used day by day. An aniline walnut oil is now obtainable, and is replacing the vegetable product.

Hair-oil Perfumes

I

Oil of bergamot . . ℥j.
Oil of lemon . . . ℥ss.
Oil of lavender . . ℥j.
Oil of cloves . . . ℥ss.
Oil of cassia . . . ℥ss.

Mix.

II

Oil of bergamot . . ℥ss.
Oil of lemon . . . ℥j.
Oil of petitgrain . . ♏xx.
Oil of rosemary . . ♏ij.
Oil of lavender . . ♏ij.
Oil of citronella . . ♏ij.
Musk . . . . gr. j.

Allow to stand for a fortnight, then filter.

III

Oil of jasmin . . . ℥x.
Oil of bergamot . . ℥vij.
Oil of cloves . . . ♏xv.
Oil of lemon . . . ♏viij.
Oil of rosemary . . ♏v.
Oil of neroli . . . ♏xx.
Oil of thyme . . . ♏j.

Mix.

IV

Oil of rose-geranium . ℥j.
Oil of verbena . . ℥j.
Oil of thyme . . . ℥j.

Mix.

V

Otto of rose . . . ℥ss.
Oil of rose-geranium . ℥ij.
Oil of bergamot . . ℥ij.
Oil of lemon . . . ℥ij.
Oil of cassia . . . ♏x.

Mix.

VI

Oil of bergamot . . ℥iv.
Oil of lemon . . . ℥j.
Oil of rose-geranium . ℥ss.
Musk . . . . ℥ss.

Macerate for a fortnight and filter.

VII

Oil of bergamot . . ℥j.
Oil of lavender . . ℥j.
Oil of cassia . . . ♏xv.
Oil of verbena . . ♏x.
Oil of neroli . . . ♏v.

Mix.

VIII

Saffrol . . . . ℥j.
Oil of lavender . . ℥j.
Oil of lemon . . . ℥j.
Oil of cedar-wood . . ♏x.

Mix.

The following quantities of perfume suffice for a gallon of the best olive oil :—

Heliotrope

Oil of rose-geranium	ʒiij.
Oil of cloves	ɱL.
Peruvian balsam	ɱL.
Heliotropin (dissolved in a little warm olive oil)	gr. xv.

Mix the balsam with the olive oil, and add the other oils.

Orange

Oil of bergamot	ʒvj.
Oil of bitter orange	ʒiij.
Oil of orange-flowers	ʒss.
Oil of rose-geranium	ɱlxxx.
Oil of petitgrain	ɱL.

Mix.

Reseda

Oil of bergamot	ʒx.
Oil of rose-geranium	ʒiij.
Oil of cloves	ɱlxxx.
Oil of basilica	ʒiss.

Rose

Oil of bergamot	ʒvij.
Otto of rose	ɱL.
Oil of rose-geranium	ʒss.
Oil of cloves	ɱlxxx.

Violet

Oil of bergamot	ʒiv.
Oil of santal	ɱlxxx.
Oil of orris	ɱlxxx.
Oil of cloves	ʒss.
Otto of rose	ɱxv.

Brilliantines

Separable

Castor oil	ʒij.
Almond oil	℥iv.
Perfume oils	ɱxv.
Absolute alcohol to	℥vj.

[It is better with 12 oz. almond oil and no castor oil.]

Unseparable

*Castor oil	ʒij.
Rectified spirit, 60 o.p.	℥viij.
Oil of neroli	ɱv.
Oil of rose-geranium	ɱx.
Oil of verbena	ɱv.
Oil of lemon	ʒss.

The green colour which is so much wanted in brilliantine is imparted by the addition of a sufficiency of green oil. A pale rose tint may be given with alkanet, and golden with gamboge or oily butter-colouring. Varieties of colour may also carry varieties of odour. Thus, the green may be flavoured with violet, pink with otto of rose, and golden with bergamot and lemon. If floral extracts are used in making brilliantine, it takes a long time to clear after being shaken up if made with 60 o.p. spirit, but with absolute alcohol the mixture quickly clears. Another simple form is olive oil ℥iv. and absolute alcohol ℥j., with perfume. Liquid paraffin is excellent for making brilliantine, and the preparation so made has the special advantage of being the best application for persons whose hair is getting thin. Violet oil (that is, liquid paraffin in which violets have been macerated) is the best for this

purpose. A tip-top preparation is made by mixing 4 parts of this violet oil with 1 part of violet perfume.

There are preparations composed of about equal parts of oil, glycerine, and spirit. There are also formulas containing honey, glucose or glycerine, and spirit without oil, but these are neither nice to use nor creditable to the retailer. Exceedingly absurd formulas have also been published in foreign parts, *e.g.*:—

I

Veal-grease	℥iiiss.
Spermaceti	℥iiiss.
White wax	℥j.
Almond oil	℥iiiss.

Mix.

II

Castor oil	℥vj.
Glycerine	℥vj.
Benzoin	℥ij.
Spirit	℥xxv.
Perfume	a sufficiency

Mix.

III

Castor oil	℥iiss.
Castile soap	℥ij.
Benzoin	℥x.
Absolute alcohol	℥xxv.
Otto of rose	℥j.
Oil of bergamot	℥ss.

Mix, shake occasionally in the course of a day to dissolve the solids, and filter.

IV

Glycerine	℥j.
Spirit	℥x.
Rose-water	℥x.

Mix.

Toilet Paraffin.—A limpid petroleum oil is supplied for use as toilet paraffin, or heavy petroleum oil mixed with its own volume of spirit (64 o.p., or methylated spirit) may be used. The toilet paraffin is usually coloured with a trace of chlorophyll or aniline dye.

LIME CREAMS

In this class of compounds are included lime creams and lime-juice and glycerine. There is a great variety of formulas, most of them innocent of lime-juice, and also of glycerine except to the extent that the combination of lime with the fatty acids of the oils used liberates a little glycerine. This preparation originated in 1864 with Mr. Eugene Rimmel. Within two years the lime-water and oil imitation came in, and in spite of the misnomer, the stuff has remained, because it is popular and suitable. But at the beginning of 1897 the Middlesex county authorities began to take action (under the Merchandise-marks Acts) against retailers of 'glycerine and lime-juice,' on the ground that the preparations sold did not contain glycerine. Conviction followed in those cases in which

glycerine was proved to be absent. It is advisable, therefore, that the preparation should be sold as 'Lime Cream,' or as 'Lime Cream, commonly called Lime-juice and Glycerine.' The best oils to use are almond oil and peach-kernel oil. The lime-water should be fresh and of full strength : weak stuff is the cause of most failures. If anyone finds that a lime cream becomes rancid within a reasonable time, he should try the addition of salicylic acid gr. iv. to each pint of the cream. But the surest way of obtaining a permanently 'sweet' cream is to use petroleum oil, and no vegetable matter, emulsifying by machine. This has been found satisfactory.

I

Almond oil . . .	ʒiiiss.
Oil of lemon . . .	ʒj.
Lime-water to . . .	ʒviij.

Mix well by shaking. Sometimes a drachm of glycerine is added. This is to justify the name. This cream separates a little clear oil, but is a good article.

II

Almond oil . . .	ʒxij.
Olive oil . . .	ʒxij.
Lime-water . . .	ʒx.
Saccharated solution of lime . . .	ʒij.
Oil of lemon . . .	ʒij.
Essence of jasmine . .	ʒij.

Mix by shaking.

Nut oil may be used, and serves equally well.

III

Almond oil . . .	ʒviij.
White wax . . .	ʒss.

Melt and add the following solution :—

Citric acid . . .	ʒss.
Rose-water . . .	ʒiij.
Glycerine . . .	ʒj.

Shake well and add the following mixture :—

Oil of lemon . . .	ʒij.
Oil of bitter almonds .	miv.
Rectified spirit . .	ʒj.

Mix.

IV

White wax . . .	ʒij.
Spermaceti . . .	ʒij.

Melt together and add

Almond oil . . .	ʒviij.
Oil of bergamot . .	ʒij.
Oil of lemon . . .	ʒss.

Then the following warmed together :—

Glycerine of borax . .	ʒij.
Lemon-juice . . .	ʒvj.

Mix.

Nos. III. and IV. are attempts to imitate Rimmel's preparation. No. III. is passable, but not a preparation that a pharmacist need be particularly proud of. No. IV. forms a pomade, from which the watery portion has a tendency to ooze out. If ʒij. instead of ʒij. of wax and spermaceti is used, the result is better and liquid. We print both formulas as a warning. They are chestnuts which have travelled the rounds of the Press in all parts of the world, but since it was suggested here

that they deserved decent burial, they have disappeared from periodicals.

V

Ol. nucis	Oiv.
Aq. calcis	Oiij.
Liq. calcis sacch.	ʒiv.
Ol. limonis	ʒss.
Ol. bergamot.	ʒj.
Ol. neroli	♏vj.
Ol. cinnamomi	♏vj.

In making this add the liq. calcis sacch. to the aq. calcis, then add both to the oil, shaking vigorously in a bottle capable of holding nearly double the quantity. Let it stand for a few days, and if any oil float on the surface add a little more liq. calcis sacch. When finished add the essential oils, and allow to stand a week, shaking occasionally, then bottle.

VI

Ol. amygdalæ	lb. ij.
Ceræ albæ	ʒj.
Aq. calcis	lb. ij.
Glycerini	ʒij.
Ol. verbenæ	ʒj.
Ol. limonis	ʒvj.
Ol. bergamot.	ʒiij.

Melt the wax in a few ounces of the oil and add the rest of the oil, previously warmed. Mix the glycerine with the water, and add to the whole of the oils gradually and with constant shaking.

VII

Curd soap in powder	ʒss.
Water	ʒiiiss.
Lime-water	ʒxiiss.
Nut oil	ʒxvj.

Dissolve the soap in the water by heating, and add to the lime-water and oil previously mixed. Then perfume.

VIII

Curd soap in shreds	ʒiss.
Distilled water	Oj.

Dissolve with heat, and while warm add to

Nut oil	Oiss.
Oil of lemon	ʒiss.
Oil of bergamot	ʒiss.

Mix.

IX

Tincture of senega	ʒss.
Almond oil	ʒj.

Shake well and add the following mixture gradually:—

Glycerine	ʒij.
Lime-juice	ʒj.
Rose-water	ʒij.

Perfume with

Oil of lemon	gtt. x.
Oil of bergamot	gtt. v.

Preparations VII. and VIII. closely resemble each other, but there is an essential difference between them. No. VII. sometimes goes wrong, although it is as nice-looking and white a preparation as one could wish. A few ounces more of water spoils it. The fact is, it is a mistake to use lime-water along with soap, as oleate of lime is thrown out, and somehow disturbs the emulsion. No. VIII. is a good formula, because there is no lime-water in it, and we may say that the cream bears dilution with water if it happen to be too thick. It does

not agree with the name, however, and it would be better to use oil of limes instead of oils of lemon and bergamot, if it is to be called 'Lime Cream.' No. IX. is strictly a 'lime-juice and glycerine,' and, although thin, forms an admirable dressing for hard and soft hair.

Almond Lime Cream

Crem. amygdal.	ʒiv.
Glycerin.	ʒiv.
Ol. amygd.	Oij.
Aquæ	ʒxxxv.
Ol. limonis	ʒss.
Ol. amygd. essent.	ɱx.
Ol. neroli	ɱx.

Mix in the above order, in a large mortar.

Cheap Lime Cream

Potassii carbonat.	ʒss.
Aquæ ferventis	ʒviiss.
Ol. olivæ	ʒxxviiss.
Liq. ammon. fort.	ʒj.
Ol. limonis	ʒiij.

Dissolve the carbonate in the water and add the oil gradually, shaking after each addition. Lastly add the ammonia and the perfume, and set aside for a few days before bottling.

Citron Cream for the Hair

A

Ceræ albæ	ʒx.
Ol. amygdalæ	ʒivss.
Ol. ricini	ʒv.
Ol. olivæ	ʒxiiss.

Melt by the heat of a water-bath.

B

Ol. limonis	ʒv.
Ol. amygdal. essent.	ɱxij.
Ac. benzoic.	ʒj.
Cambogiæ	ʒj.
Spt. rectificat.	ʒj.

Dissolve the gamboge in the spirit, filter, and mix the oils and acid with the filtrate.

Add B to A in small quantities at a time, shaking well. Next add the following, assiduously shaking :—

Acid. citric.	ʒiss.
Aquæ destillat.	ʒv.
Glycerini	ʒv.

If carefully made, this turns out a golden-coloured semi-fluid preparation, and is retailed in 3-oz. round-shouldered bottles at 1*s*.

Lanolin Hair Cream

1.	Crem. amygdal.	ʒj.
	Glycerin.	ʒj.
2.	Ol. amygd.	ʒvj.
	Lanolin.	ʒss.
	Otto rosæ	ɱvj.
3.	Tr. canthar.	ʒij.
	Aquam ad	ʒiv.

Mix the first two lots in separate mortars; gradually add No. 2 to No. 1, then stir in No. 3 gradually.

Imitation of Euchrisma

Castor oil	ʒiss.
Oil of cloves	ɱv.
Oil of verbena	ɱv.
Rectified spirit	ʒx.

Crinema

This is euchrisma perfumed with oils of cassia and verbena.

Caranthol

Castor oil	Oj.
Rectified spirit (60 o.p.)	Oj.
Tincture of cantharides	ʒj.
Oil of bergamot	ʒij.

Colour with alkanet, allow to stand for a few days, and filter.

This formula has been in vogue for many years as 'Tricopherous,' but that word is a registered trade-mark (No. 60,088, 1887) for Barry's preparation, to which alone it applies.

BAY RUM (*Spiritus Myrciæ*)

Bay rum is a West Indian product, or originated in the West Indian Islands. The article exported from the principal seaports there is made either directly from the leaves of *Myrcia acris* (*Pimenta acris*), or by dissolving freshly made bay oil in white rum. From an account of the industry in St. Thomas (*The Chemist and Druggist*, 1912, II., 714) it appears that a 200-gallon still is charged with 400 lbs. of fresh leaves or 200 lbs. of dried leaves, 65 gallons of Demerara rum, and water to fill. When oil is used two bottlefuls of it (about 60 oz.) is dissolved in 100 gallons of rum, shaken with a little magnesia, and decanted when clear. In Dominica the leaves after they are picked from the tree are dried before being placed in in the distilling-vessel. The oil produced is then dissolved in rum of about 18 o.p. in the proportion of 24 oz. to 100 gallons of rum. Some manufacturers vary the proportions according to their fancy, but few if any add other flavouring oils. One of the principal manufacturers in the West Indies states that in the preparation of his rum only the true leaves are used, and they are not dried, but thrown fresh into the still along with the ripe berries in a certain proportion. The essential oil of the berries has a much stronger aroma than that of the leaves, so that a bay rum distilled partly from the berries has a stronger odour, and keeps its flavour longer, than if distilled from the leaves alone. The rum used for the distillation must be of the best quality, perfectly pure, and without any foreign odour. A good St. Croix rum serves the purpose best, but it must be considerably stronger than what is generally brought into the market. Distillation is best done by steam in copper stills. A very large proportion of the bay rum used is made by dissolving the oil in dilute spirit, with or without other flavouring agents. From a number of formulas we quote a selection of the more important. The first two are given as typifying those which are intended to reproduce the West Indian bouquet. The first is as near an approach to the true article as can be desired, but the second is an entirely foreign compound; distinctive enough, it is true, still not like true bay rum.

No. IV*a* is a formula (No. v. modified) for the industrial methylated spirit preparation which has been approved by the Board of Customs and Excise, who require the proportion of true quassia extract to be not less than 0·05 per cent. if calculated as dry extract. Commercial extract of quassia averages 80 per cent. of dry extract (*C. & D.*, 1911, I., 647), so that 10 grains per pint is an ample addition. Each chemist or compounder in the United Kingdom must get permission from the Board to use industrial spirit.

I

Jamaica rum	℥xvj.
Rectified spirit	℥lxiv.
Distilled water	℥xlviij.

Mix and add

Oil of bay	℥j.

Dissolve.

II

Myrcia acris leaves	lb. ij.
Cardamoms	℥viij.
Cassia	℥ij.
Cloves	℥iss.
Rum	Oxiv.

Macerate a week and distil 1½ gallon.

III

Oil of bay	℥j.
Oil of orange-peel	℥j.
Oil of pimento	℥j.
Rectified spirit	Oviiss.
Water	Oivss.

Mix, and after a few days filter.

IV

Oil of bay	℥j.
Oil of orange-peel	℥ss.
Oil of pimento	℥ss.
Rectified spirit	℥lxxvj.
Water to	℥cxxv.

Dissolve the oils in the spirit, gradually add the water, and after eight days filter.

IV*a*

Oil of bay	℥x.
Oil of pimento	℥j.
Extract of quassia	℥j.
Saponin	℥ij.
Acetic ether	℥ij.
Industrial spirit	Cong. iij.
Water	Cong. ij.

Dissolve the oils and ether in the spirit; separately dissolve the extract in the water and gradually add this to the spirit solution; add the saponin and set aside for at least eight days, then filter.

No. III. is a foreign formula, said to yield 'an unsurpassed product.' No. IV. is from the United States Pharmacopœia. Apparently No. III. is a copy of the latter with the oil of bay unaccountably reduced to a sixteenth of what it should be. We print the two recipes together as an object-lesson on how formulas change as they go round the world.

V

Oil of bay	℥x.
Oil of pimento	℥j.
Acetic ether	℥ij.
Rectified spirit	Cong. iij.
Water	Cong. ij.

Prepare as No. IV.

VI

Oil of bay	℥vj.
Oil of pimento	mxxv.
Acetic ether	℥j.
Rectified spirit	Cong. j.
Jamaica rum	Cong. j.

Prepare as No. IV.

Acetic ether is supposed to give the preparation a more natural flavour. It will be understood that uncoloured rum should always be used. Some preparations sold in this country are coloured because, we suppose, the popular idea of rum is a brownish liquid. Colouring is as much out of place in the compound as the letter 'h' in the word. Rose-water, essence of violets, and solution of ammonia are found in other formulas, but they are entirely foreign to the preparation, and unnecessary additions.

Bay Rum Hair-wash

I

Carbonate of ammonium	ʒv.
Borax	ʒss.
Distilled water	ʒxxv.

Dissolve. Separately mix

Oil of bergamot	♏viij.
Oil of rosemary	♏iij.
Oil of bay	♏v.
Otto of rose	♏ij.
Powdered talc	ʒv.

Then gradually add the aqueous solution, and, after well mixing, filter through a moistened filtering-paper. To the filtrate add

Glycerine	ʒx.

Mix.

II

Glycerini	ʒiv.
Tr. cantharid.	ʒss.
Liq. ammoniæ	ʒss.
Aq. rosæ conc.	ʒij.
Spt. myrciæ	ʒx.

M.

Bay Rum Hair-tonic

Bay rum	Oiv.
Glycerine	ʒxvj.
Tincture of cantharides	ʒviij.
Tincture of quillaia	ʒviij.
Rose-water	ʒviij.
Orange-flower water	ʒviij.

Mix and filter.

Bay Rum After-shave

Also a good lotion for chapped hands, and useful as a bath perfume.

Bay rum	ʒxlviij.
Glycerine	ʒviij.
Extrait of violets	ʒss.
Rose-water	ʒviij.

Mix in above order and filter.

Bay Rum Shampoo

White Castile soap	ʒss.
Rose-water	ʒj.
Solution of ammonia	ʒj.
Bay rum	ʒij.
Distilled water to	Oij.

Dissolve the soap in 30 oz. of water by heating; cool to about 100° F., and add the rest of the ingredients.

HAIR-LOTIONS AND HAIR-WASHES

The primary purpose of hair-washes is as a stimulus to the hair follicles. They are best applied with a small sponge, which when damped with the lotion should be gently rubbed upon the skin, the hair being parted for this purpose. When the whole surface is treated in this way, the application should be followed by vigorous brushing in one direction, so as to

assist in the evaporation of the lotion and to complete the stimulus. Glycerine is an almost universal constituent in hair-lotions, and while it is advantageous in the maximum proportion of 1 in 10 (where the lotions are to be well rubbed into the skin), it is frequently objected to, because when all the rest of the lotion evaporates it remains on the hair, which thus becomes sticky.

Much more use might be made of hair-lotions for the relief of headache. For this purpose they should be alcoholic and contain acetic acid well covered by perfumes. When applied freely and followed by gentle brushing such lotions relieve the sick-headache of women after other remedies have failed.

The first group of recipes which we give are mostly for lotions of a simple character, to any one of which the retailer may attach any name he pleases. In each case, however, we supply a name. Some of these names are merely suggestive.

Borax-and-Camphor Lotions

I

Honey	ʒj.
Borax	ʒj.
Cochineal	ʒij.
Distilled water	ʒxv.

Powder the solids and pour upon them the water boiling. Then stir in the honey, and when lukewarm add the following solution :—

Oil of rosemary	♏xv.
Camphor	ʒj.
Rectified spirit	ʒij.

After standing for a day filter.

II

Glycerine of borax	ʒj.
Spirit of camphor	ʒij.
Spirit of rosemary	ʒj.
Aromatic spirit of ammonia	ʒiij.
Distilled water to	ʒviij.

Mix the spirits and add to the glycerine and water. Filter through a wetted filter-paper sprinkled with carbonate of magnesium.

This is a nicer lotion than No. I., the pink colour of which some object to.

Cantharidine Lotion

(Stimulating)

Spt. ammon. arom.	ʒij.
Glycerini	ʒj.
Tr. cantharidis	ʒss.
Aq. rosmarini ad	ʒxx.

M.

(Non-greasy)

Glycerine	ʒij.
Tincture of cantharides	ʒss.
Solution of ammonia	ʒss.
Rose-water (triple)	ʒij.
Bay rum	ʒx.

Mix.

An Atomiser Wash

Acetic acid	ʒss.
Glycerine	ʒj.
Rectified spirit	ʒij.
Jockey Club	ʒss.
Tincture of saffron	ʒij.
Water to	ʒxij.

Mix the spirit and Jockey Club with 2 dr. of talc and 6 oz. of water, filter through a wetted filter, and add the other ingredients.

Chillie Hair-lotion

(Professor Gross's Prescription)

Tr. cantharidis . .	ʒiss.
Tr. capsici . . .	mxx.
Glycerini . . .	ʒss.
Aq. coloniensis ad . .	ʒvj.

M.

Capillary Stimulant

Liq. ammoniæ . .	ʒss.
Tr. cantharidis . .	ʒss.
Aq. coloniensis . .	ʒj.
Aq. ad	ʒviij.

M.

This is the prescription of a famous physician, and was prescribed to prevent the hair falling off. It is decidedly effectual, and should be applied to the thin parts with a sponge morning and evening.

Acid Stimulant

Acetic acid . . .	ʒv.
Spirit of chloroform .	ʒvj.
Eau de Cologne . .	ʒvj.
Glycerine . . .	ʒiv.
Water to . . .	Oiiss.

Shake with a tablespoonful of kieselguhr, and filter.

Alkaline Stimulant

Solution of ammonia .	ʒj.
Mindererus spirit . .	ʒj.
Tincture of cantharides .	ʒss.
Spirit of rosemary . .	ʒiss.
Rose-water to . .	ʒviij.

Mix.

These two lotions are to be used together—the acid one morning and evening, or when headachy, and the alkaline one every second night.

Acetous Hair-lotion (A)

Acet. cantharidis . .	ʒss.
Tr. cinchonæ . . .	ʒss.
Acid. acetic. arom. . .	ʒss.
Aq. coloniensis . .	ʒij.
Aq. ad	ʒvij.

Mix and filter.

Stimulating Hair-lotion (B)

Liq. ammoniæ . .	ʒvj.
Spt. ammon. arom. . .	ʒj.
Ext. pilocarpi liq. . .	ʒij.
Aq. rosæ ad . . .	ʒviij.

Mix and filter.

Lotions A and B to be used on alternate nights, being applied freely to the roots of the hair with a sponge, and the hair afterwards brushed for ten minutes. Two 16-oz. bottles of the above have been sold for half-a-guinea, so there should be little difficulty in getting 2*s.* 6*d.* each for the 8-oz. bottles.

Alkaline Hair-lotion

(Dr. Tom Robinson's)

Boracis	ʒj.
Glycerini . . .	ʒij.
Tr. cantharid. . .	ʒvj.
Liq. ammoniæ . .	ʒj.
Ol. myrciæ . . .	miij.
Aq. ad	ʒvj.

Dissolve the oil in the tincture and add to the other ingredients.

Acid Hair-lotion

(Dr. Tom Robinson's)

Aceti aromatici . . .	ʒij.
Glycerini . . .	ʒij.
Spt. rectificat. . .	ʒj.
Liq. epispastici . .	ʒj.
Aq. flor. aurantii . .	ʒij.
Aq. rosæ ad . . .	ʒvj.

M.

These lotions of Dr. Robinson's are for the prevention of Premature Baldness in men and women. The alkaline lotion should be used the first week, being well rubbed in with a piece of spongio-piline, but gently, in order that the weak hairs may not be dragged out. The second week use the

acid lotion similarly, and proceed with this alternation, dressing the hair meanwhile with brilliantine.

Quinine Hair-tonics.—It is a popular notion that quinine has a tonic effect upon the roots of the hair when applied externally. It is a harmless belief, and the substances generally associated with the quinine do have a stimulating influence upon the scalp, so that the alkaloid may get the credit for virtues possessed by its associates. We are assured on excellent authority that the following recipe provides a preparation of marvellous efficacy in stimulating the growth of the hair :—

Sulphate of zinc	gr. xvj.
Sulphate of quinine	℈j.
Tincture of cantharides	ʒj.
Bay rum	ʒiij.
Glycerine	ʒj.
Water	ʒij.

Dissolve the quinine in the alcoholic liquids, and the zinc sulphate in the water; add the glycerine to the latter and mix the liquids.

This lotion is to be liberally sprinkled upon the scalp, and the latter gently shampooed for five minutes, adding more of the lotion to assist the friction with the fingers. The following are also good recipes :—

I

Hydrochloride of quinine	℈j.
Glycerine	ʒj.

Rub together in a mortar and add the following to make a solution :—

Eau de Cologne	ʒij.
Bay rum	ʒij.
Rose-water	ʒxj.

Filter.

II

Sulphate of quinine	℈j.
Castor oil	ʒj.
Tincture of cantharides	ʒss.
Extrait of jasmine	ʒiij.
Eau de Cologne	ʒiij.
Oil of bitter almonds	♏v.
Oil of bergamot	ʒss.
Rectified spirit	ʒviij.

Mix and colour with tincture of alkanet if desired.

III

Quinine hydrochloride	℈ij.
Tartaric acid	ʒss.
Tincture of cantharides	ʒss.
Orange-flower water	ʒij.
Violet perfume	ʒij.
Glycerine	ʒij.
Distilled water	ʒvj.
Rectified spirit	ʒviij.

Mix.

IV

Quinine bisulphate	ʒj.
Pilocarpine hydrochloride	℈j.
Chloral hydrate	ʒss.
Castor oil	ʒj.
Formic spirit	ʒiv.
Oil of rose-geranium	ʒss.
Oil of neroli	♏xx.
Rectified spirit to	ʒxxxij.

Mix.

To be applied twice a week to the roots of the hair at bedtime.

Eau de Quinine is a preparation originated by Ed. Pinaud, of Paris, the original being a bright red preparation, which many have attempted to imitate, but few with success. It is stated that the original Eau de Quinine contains no alkaloid.

I

Red sanderswood	ʒss.
Orris-root	℥iv.
Cloves	℈j.
Nutmeg	℈ss.
Rectified spirit	ʒxviij.
Water	ʒvj.

Macerate for a week, filter, and to the filtrate add

Quinine hydrochloride	℈j.
Eau de Cologne	ʒj.
Oil of lavender	♏vj.
Oil of rose-geranium	♏x.
Oil of neroli	♏iv.
Glycerine	ʒiss.
Cochineal colouring	ʒj.

Mix the cochineal with the glycerine before adding. Set aside for two weeks and filter.

II (Dieterich's)

Castor oil	ʒx.
Quinine sulphate	gr. xv.
Eau de Cologne	ʒiij.
Rum	ʒiiiss.
Rectified spirit	ʒvss.
Glycerine	℥x.
Rose-water	℥xvss.

Dissolve the quinine in the mixed spirituous liquids, add the glycerine and the water, then colour a dark red with a trace of alkannin.

III

Oil of rose-geranium	ʒiij.
Oil of sweet orange	ʒx.
Oil of bergamot	ʒx.
Peruvian balsam	ʒiiss.
Tincture of cantharides	ʒiv.
Tincture of cinchona	ʒvij.
Soap liniment	ʒxv.
Rectified spirit	ʒxxxv
Eau de Cologne	ʒxxxv.
Cochineal colouring	℥v.
Brandy to	Oxviij.

Mix the whole together, allow to stand for a month, and filter.

This is an excellent but expensive *Eau de Quinine*, the recipe being a large manufacturer's.

IV

Yellow cinchona	30 parts
Cochineal	2 parts
Potassium carbonate	2 parts
Alcohol (90-per-cent.)	80 parts
Perfume	a sufficiency
Water	500 parts

A decoction of the cinchona is first made, and when this is cold the cochineal and potassium carbonate are added, the liquid filtered, and the alcohol and perfume added to the filtrate.

The last is one of fourteen formulas given in the *C. & D.*, 1911, I., 149.

Dandruff or Scurf Preparations.—For the causation and treatment of dandruff *see* p. 72. Very severe cases sometimes herald a more extensive skin-disease—a fact which retailers may keep in mind, with the view to referring a customer so afflicted to a specialist. In ordinary cases the first step in the treatment is to wash the head well. A tablespoonful of liquid extract of quillaia in a quart of hot water is about the best for this purpose, or the following

Shampoo Liquid

Oil of lavender	♏x.
Rectified spirit	ʒss.
Soft soap, B.P.	ʒij.
Distilled water to	ʒvj.
Dissolve.	

The treatment then begins. Schuldham (who originated the bacillary explanation of seborrhœa) recommends a glycerine of tannin (10 to 20 gr. in the ounce), resorcin, or other antiseptic treatment. This is noteworthy. Lotions which contain an antiseptic are unquestionably the best. The following prescriptions are of this nature, and are intended to attack the disease shortly after it has set in.

Dr. Mansel Sympson's Lotion

Tr. cantharidis . .	ʒss.
Acid. acetic. dil. . .	ʒss.
Spt. rosmarini . .	ʒj.
Glycerini . . .	ʒss.
Aq. rosæ ad . . .	ʒviij.

Dr. Michie's Lotion

Liq. hydrarg. perchlor. (gr. iv.–ʒj.) . .	ʒiiss.
Liq. potassæ . . .	♃iij.
Aq. ad	ʒvj.

To be well rubbed into the roots of the hair twice a day.

Dr. Eigler's Cure

Caustic potash . .	gr. vj.
Carbolic acid . . .	gr. xxv.
Lanoline	♃v.
Cocoanut oil . . .	♃iv.

Mix, first dissolving the potash and acid in ♃j. of water.

To be rubbed into the scalp.

Alkaline lotions which penetrate the fatty secretion, or ethereal solvents of the secretion, are preferable, because they permit the bactericides to get at the bacilli.

Dr. Laird Pearson's Treatment

(No. 1 lotion)

Hydrarg. perchlor. . .	♃ss.
Glycerini . . .	ʒv.
Aq. coloniensis . .	ʒv.
Aq. ad	ʒxv.
M. et S.	

(No. 2 lotion)

Beta-naphthol. . .	♃ij.
Spt. rectificat. . .	Oj.
Solve.	

(Oily Application)

Acid. salicylic. . .	♃ij.
Tr. benzoin. co. . .	♃iss.
Ol. olivæ ad . . .	ʒx.
M.	

Wash the hair with terebene soap, rinse well, and dry with a rough towel. Rub in some No. 1 lotion, and again dry. Next apply No. 2 lotion, and allow it to dry spontaneously. Dress with the oily application and brush. This treatment should be carried out daily for a month, and then every alternate day for a fortnight. The dandruff disappears in a few days, and the hair becomes vigorous and supple in a remarkably short time.

Dr. David Walsh's

(Stimulating Antiseptic Lotion)

Resorcini . . .	♃j.
Glycer. acid. borici. .	♃ij.
Spt. rectificat. ad . .	ʒviij.

(Detergent Lotion)

Liq. picis carbonis . .	♃j.
Acidi borici . . .	♃j.
Olei ricini . . .	♃ij.
Tr. quillaiæ . . .	♃j.
Spt. rectificat. ad . .	ʒviij.

The two recipes following are for Washing Spirits to put into the water used for washing the head :—

I

Tincture of quillaia	ʒvj.
Tincture of capsicum	ʒj.
Eau de Cologne	ʒvj.
Glycerine	ʒvj.
Carbonate of ammonium	℈ij.

II

Spirit of ether	ʒiij.
Tincture of benzoin	ʒij.
Vanillin	gr. ss.
Heliotropin	gr. iss.
Oil of rose-geranium	♏ij.

While any of the foregoing may be put up as specialities, the following Scurf-lotions are well suited for general retail :—

I

Tr. cinchonæ	ʒj.
Liq. potassæ	ʒij.
Potass. carbonat.	ʒj.
Aq. coloniensis	ʒj.
Aq. ad	ʒviij.

Mix and filter.

To be used twice a week.

II

Resorcin	ʒj.
Rectified spirit	ʒviiss.

Dissolve and add to

Castor oil	ʒij.
Peruvian balsam	ʒss.

Shake well, perfume, and filter.

III

Salicylic acid	ʒv.
Rectified spirit	Oj.
Oil of wintergreen	♏v.
Otto of rose	♏j.
Oil of neroli	♏j.
Heliotropin	gr. iiss.

Dissolve and add

Glycerine	ʒx.
Water	ʒx.

Filter through a wetted filter-paper.

IV

Beta-naphthol	ʒv.
Proof spirit	ʒxv.
Tincture of quillaia	ʒxv.
Glycerine	ʒx.
Ess. Bouquet	ʒvj.

Mix and filter.

V

Thymol.	gr. xij.
Chloral. hydrat.	ʒij.
Acidi borici	ʒj.
Liq. hamamel. dest. ad	ʒvj.

M.S.A.

VI

Acid. salicylic.	ʒss.
Chloral. hydrat.	ʒj.
Sodii sulphat.	ʒiiss.
Aquam ad	ʒiv.

M.

Directions for Use.—Separate the hair, and drop the lotion on the parting, rubbing it well in, and so on until the whole scalp is treated. Do this nightly for a week, then every other night for the second week.

In each case (unless otherwise stated) apply the lotion freely through a sprinkler, shampooing with the fingers for five minutes. Keep the head covered for half an hour, and dress the hair with a little Carbolated Brilliantine, which is ordinary brilliantine made with oil containing 5 per cent. of carbolic acid. Lime cream should not be used.

The first of the following formulas for dandruff-pomade is based on the prescription of the late Mr. Startin. The original preparation was somewhat thin, from being made with camphorated oil; but as modified the preparation is of nice consistency, has a taking appearance, and is an effectual remedy for dandruff as well as a good hair-dressing.

Dandruff Pomade

I

Hydrarg. oxid. flav.	gr. x.
Hydrarg. ammoniat	gr. iv.
Hydrarg. sulphid. rub.	gr. j.
Ung. camphoræ	ʒss.
Ung. simplicis	ʒiss.
Ol. neroli	ɱiij.
Otto rosæ	ɱij.

Melt the ointments on a water-bath; rub the powders with a little of the mixture on a slab, and add to the rest when it begins to be creamy; also the perfumes. Mix and bottle.

Ung. Camphor. for this is made by dissolving 1 oz. of camphor in 5 oz. of melted lard.

II

Salicylic acid	ʒss.
Borax	gr. xv.
Peruvian balsam	ʒss.
Vaseline	ʒj.
Oil of cinnamon	ɱiij.
Oil of bergamot	ɱx.

Mix well in the cold.

III

Ung. hydrarg. ox. rub.	ʒss.
Adipis benzoat.	ʒiss.
Ol. bergamot.	ɱij.

M.

IV

Ung. hydrarg. nit.	ʒj.
Ol. cadini	ʒj.
Ol. olivæ	ʒij.
Lanolin. anhydros.	ʒss.

M.

V

Acid. salicylic.	℈j.
Chloral. hydrat.	gr. x.
Ol. eucalypti	ɱv.
Ung. zinci oxidi	ʒss.
Ung. aq. rosæ	ʒss.

M.S.A.

VI

Acidi salicylici	gr. x.
Hydrarg. ammoniat.	gr. x.
Cyllin.	ʒss.
Vaselin. ad	ʒj.

M.S.A.

Rosemary Hair-lotions.—Rosemary has from the earliest times been a favourite hair-stimulant, and is still popular.

Acetous

Acetic acid	℥ss.
Vinegar of cantharides	ʒj.
Spirit of rosemary	ʒj.
Essence of white rose	ʒj.
Water to	ʒviij.

Alkaline

Borax	ʒss.
Glycerine	ʒj.
Solution of ammonia	ʒj.
Spirit of rosemary	ʒiss.
Rose-water to	ʒxvj.

Rub the borax with the glycerine, add the water, dissolve, then the other ingredients, and filter through mag. carb. levis.

Brilliant

Tr. cantharidis	ʒj.
Spt. rosmarin.	ʒiij.
Ol. amygdal. dulc.	ʒiv.
Ol. lavand. ang.	ɱx.
Ol. bergamot.	ɱxx.
Otto rosæ	ɱiv.

To be applied every other morn

ing, well shaking the bottle before use.

Glycerine and Rosemary

Ol. amygdal. dulc.	ʒj.
Liq. ammoniæ	ʒiij.
Ol. rosmarini	♏x.
Glycerini	ʒij.
Spt. vini rect.	ʒiv.
Aq. rosæ	ʒviij.

Mix the oils with the solution of ammonia and 2 oz. of rose-water, shake well, and add the glycerine, spirit, and the rest of the rose-water.

Saponaceous

I

Potassii carbonat.	ʒj.
Saponis mollis, B.P.	ʒj.
Spt. rosmarini	ʒj.
Aq. ad	ʒviij.

M. et S.

II

Saponis mollis, B.P.	ʒss.
Spt. tenuior.	ʒj.
Ol. rosmarini	♏xxv.
Ol. lavand.	♏viij.
Aq. ad	ʒviij.

Mix in above order and filter.

Tilbury Fox's Lotion

Tr. nucis vom.	ʒiij.
Aceti destillat.	ʒiiss.
Tr. capsici	ʒj.
Tr. cantharidis	ʒvj.
Spt. rosmarini	ʒj.
Aq. rosæ ad	ʒvj.

M.

(Modified)

Tr. nucis vom.	ʒss.
Tr. cantharidis	ʒiiss.
Glycerini	ʒiiss.
Acid. acetic.	ʒss.
Aq. rosæ ad	ʒvj.

M.

Children's or Nursery Hair-lotions.—The object of these is to kill pediculi and their ova, or 'nits.' They should in all cases be accompanied by the use of the small-tooth comb twice or three times a week. The hair should be washed every other night in the case of boys, and at least once a week in the case of girls, with carbolic soap, or mercuric-iodide soap, which is a true parasiticide.

I

Cort. quillaiæ cont.	ʒss.
Ligni quassiæ	ʒj.
Chiratæ	ʒij.
Aquæ bullientis	Oij.

Infuse for one hour, strain, and add

Acid. salicylic.	ʒij.
Tr. lavand. co.	ʒj.

Set aside for four days, filter, and bottle.

Directions.—After combing the hair thoroughly, apply the lotion to the roots with a sponge, sprinkle some upon the hair-brush, and well brush the hair in order to distribute the lotion equally.

Four-ounce bottles have been sold at 7*d.*; 8-oz., 1*s.* It is a good lotion.

II

Stavesacre-seeds, in rough powder	ʒij.
Acetic acid	ʒj.
Water	ʒxvj.

Boil for ten minutes in a covered vessel, set aside till cold; then add

Rectified spirit	ʒij.
Oil of geranium	♏ij.
Oil of lavender	♏ij.
Oil of lemon	♏iv.

Filter and add

Glycerine	ʒj.
Water to	Oj.

This is the Edinburgh Infirmary Pharmacopœia preparation. It is a valuable one, being certain in its effects. Use like No. I.

III

Sulphate of quinine	gr. x.
Acetic acid	ʒj.
Glycerine	ʒij.
Conc. infusion of quassia	ʒviij.
Eau de Cologne	ʒj.
Rectified spirit	ʒj.
Water to	Oj.

Mix and filter through a wetted filter-paper.

IV

Larkspur-seed	ʒx.
Potassium carbonate	ʒj.
Water	Oiiss.

Boil together five minutes, and when cold add

Rectified spirit	Oiiss.
Water to	Ov.

Filter.

V

Quillaia-bark	ʒj.
Eau de Cologne	ʒj.
Rectified spirit	ʒiij.
Water	ʒviij.

Macerate for a week and filter into the following mixture :—

Solution of ammonia	ʒj.
Tincture of capsicum	ʒij.
Jockey Club	ʒj.
Camphor-water to	Oj.

Mix.

VI

Glycerine of borax	ʒj.
Conc. infusion of quassia	ʒiv.
Spirit of rosemary	ʒj.
Camphor-water	ʒiij.
Rose-water to	ʒxij.

Mix and perfume.

VII

Oil of stavesacre	ʒss.
Hair-oil perfume	a sufficiency
Olive oil to	ʒvj.

Mix.

No. II. is a great favourite in Great Britain, but No. IV. is better; it is an American preparation which 'causes consternation in the ranks of the pediculus.' Larkspur is *Delphinium consolida*, and is similar in properties to stavesacre (*D. Staphisagria*), the seed of which may also be used. The alkaline method of extraction is more rational than the acetic. No. V. is used as a shampoo in washing the head. As a dressing use No. VII., which at the same time kills the 'nits'; in fact, it may be called Nit-oil (*see also* Hair-oils, p. 91); but the article commonly sold under that name is 1-in-20 carbolic oil coloured with alkanet and perfumed.

Special Hair-lotions

Sir Erasmus Wilson's Hair-lotion.—This popular application for the hair is, as commonly understood, a mixture of oil with ammonia and honey-water, but Sir Erasmus varied the prescription according to his case. The first three of the

following are from originals of the prescriber, No. 1. being the preparation generally put up for retail:—

I

Ol. amygdal.	ʒj.
Liq. ammon. fort.	℥ʒj.
Spt. rosmarini	ʒiv.
Aq. mellis	℥ij.
M.	

II

Ol. amygdal. dulc.	ʒj.
Liq. ammon.	℥ʒj.
Spt. chloroform.	ʒj.
Spt. rosmarini	℥v.
Ol. limonis	ʒss.
M.	

III

Ol. amygd. dulc.	℥ss.–ʒj.
Spt. ammon. arom.	ʒj.–ℨij.
Spt. chloroformi	ʒj.–ℨij.
Spt. rosmarini	ʒij.–℥vss.
Ol. limonis	ʒss.
M.	

Directions: To be applied to the roots of the air daily after brushing.

A few drops of oleic acid help the emulsification of the mixture, yet allow separation on standing. A creamy hair-wash is made by using rose-water for honey-water.

Modifications

I

Ol. lavandulæ	ɱx.
Ol. rosmarini	ɱx.
Tr. cantharidis	ʒij.
Aq. coloniensis	℥ij.
M.	

II

Acet. cantharidis	℥ss.
Aq. mellis	℥ss.
Glycerini	℥ss.
Aq. flor. aurantii	ʒij.
Aq. ad	℥viij.
M.	

This is sometimes sold as 'Wilson's lotion' by hairdressers.

III

Boracis	℈j.
Aq. flor. aurantii	℥iss.
Aq. destillatæ	℥vj.
Ol. amygdal.	℥ij.

Dissolve the borax in 2 oz. of water, shake up the oil with this, and add the rest of the waters gradually.

Locock's Hair-lotion was prescribed by the celebrated oculist Alexander for his wife (*C. & D.*, 1884, p. 269). Sir Charles Locock, M.D., was recommended to try it in his own family, which he did, taking it to a West-end house to be dispensed, and the lotion became known and popular. The original formula is:—

Ol. macidis	ʒss.
Ol. olivæ	ʒij.
Liq. ammoniæ	ʒss.
Spt. rosmarini	℥j.
Aq. rosæ	℥iiss.

The following *modus operandi* is recommended:—Put the oil of mace in a mortar and mix with it the olive oil by vigorous and hard stirring with the pestle. Work in the solution of ammonia in the same manner until it is thoroughly combined and a pasty saponaceous mass is produced. Thin this by the slow addition of about an ounce of the water. Mix the spirit with the remainder, and work that mixture into the emulsion with great care.

The following formulas have also been dubbed the 'correct working formula' :—

A

Ol. macidis	℥v.
Ol. olivæ	℥xx.
Liq. ammon. fort.	℥xx.
Spt. rosmar.	℥xL.
Aq. rosæ ad	Cong. ij.

M.

B

Ol. macidis	ʒj.
Ol. olivæ	ʒij.
Liq. ammon.	ʒij.
Aq. rosæ ad	℥iv.

Mix the oils, and gradually add the ammonia and water mixed together.

It is a curious circumstance that the difficulty of producing a satisfactory emulsion of the ol. macidis has led to many modifications of the formula, some of which appear to be well appreciated.

Hair-tonic

Glycerine of borax	ʒiij.
Rose-water to	℥viij.

Mix.

Several popular hair-tonics owe their efficacy to borax. They are useful because they are detergent.

Bartholow's Cure for Baldness

Ext. pilocarpi liq.	ʒj.
Tr. cantharidis	℥ss.
Lin. saponis	℥iiss.

M.

To be rubbed into the scalp every day.

Bouchard's Lotion

For use after fevers, to prevent the hair falling out and strengthen it.

Castor oil	ʒij.
Tar	ʒss.
Tincture of benzoin	ʒvj.
Chloroform	ʒv.
Rectified spirit	℥xxxvj.
Perfume	a sufficiency

Mix.

Cantharidine Hair-stimulant

Cantharidin	gr. v.
Acetic ether	ʒiij.
Glycerine to	℥j.

Reduce the cantharidin to powder and shake with the ether, then add the glycerine. Separately prepare the following mixture :—

Oil of rose-geranium	ʒss.
Oil of eucalyptus	ʒss.
Oil of rosemary	ʒss.
Oil of bergamot	mxx.
Powdered borax	℥vj.
Caramel	ʒj.
Camphor-water	Oij.
Distilled water	Oij.

Triturate the oils with the borax, add the waters, caramel, and cantharidin solution ; allow to stand for a fortnight, shaking daily. Filter through powdered pumice (about 1 oz.), which should be shaken with the mixture before filtration.

The last has been put up in 10-oz. round-shouldered white flint-glass bottles. It is to be used every morning and evening, well brushing after. The hair should be washed with

soap and warm water, to which has been added a little of the following :—

Rosemary Hair-wash Powder

I

Pulv. quillaiæ	℈j.
Pulv. boracis	ʒij.
Pulv. camphoræ	gr. x.
Ol. rosmarini	♏iij.

M.

Sufficient for a wine-bottle of water.

II

Powdered borax	ʒxij.
Dried carbonate of sodium	ʒviij.
Oil of rosemary	ʒj.

Mix intimately.

Half an ounce for a quart jugful of hot water.

Dr. Rainy's Hair-wash

Tr. capsici	ʒss.
Tr. cantharid.	ʒj.
Ol. bergamott.	ʒij.
Aq. rosæ	ʒiv.
Spt. vini rect. ad	ʒxij.

Mix and filter through mag. carb. levis.

Jaborandi Lotion

Jaborandi-leaves	ʒss.
Cinchona-bark	℥j.
Rectified spirit	ʒij.
Bay rum	ʒij.
Rose-water	ʒij.

Powder the drugs and percolate with the mixed liquids. To the percolate add

Glycerine	ʒij.
Essence of white rose	ʒj.

Mix.

The following is a modification of the foregoing, called

The Premier Hair-restorer

Quininæ sulphat.	℈j.
Tr. jaborandi	ʒj.
Aq. coloniensis	ʒij.
Glycerini	ʒj.
Spt. myrciæ	ʒij.
Aq. rosæ	ʒxj.

Dissolve the quinine in the rose-water with the aid of ac. sulph. dil. ♏xx. and add the glycerine. Mix the rest of the ingredients and add to the aqueous mixture. After four hours filter.

Dr. Murrell's Lotion

Tr. cantharidis	ʒvj.
Tr. nucis vomic.	ʒiij.
Aceti destillat.	ʒiiss.
Tr. capsici	ʒj.
Spt. rosmarini	ʒij.
Aq. sambuci	ʒj.
Aq. rosæ ad	ʒvj.

Pilocarpine Hair-lotion

Pilocarpine is as effective a restorer as jaborandi, and much nicer to use.

I. 'Extra Pharmacopœia'

Nitrate of pilocarpine	gr. ij.
Hydrochloride of quinine	gr. viij.
Glycerine	ʒij.
Rose-water	ʒvj.

Mix.

II

Resorcini	ʒv.
Pilocarpini nitrat.	gr. v.
Spt. myrciæ	ʒiiss.
Spt. rectificati	ʒxx.
Glycer. acid. boric.	ʒij.
Tr. croci	♏x.
Sol. sat. acid. boric. ad	ʒxl.

III. Dr. Whitla's

Pilocarpin. hydrochlor.	gr. v.
Otto rosæ	♏viij.
Ol. rosmarini	ʒiv.
Lin. cantharidis	ʒiv.
Glycerini	ʒj.
Ol. amygdal. dulc.	ʒij.
Spt. camphoræ	ʒiij.

To be well rubbed into the scalp night and morning.

Dr. Neville Leslie's Hair-wash

Cantharidin. . . .	gr. j.
Ol. ricini . . .	ʒss.
Ol. myristicæ essent. .	♏x.
Ess. rosæ . . .	q.s.
Spt. rectificat. ad . .	ʒiv.

The cantharidin to be dissolved in a drachm of acetone before mixing with the other ingredients.

A small quantity of this lotion to be rubbed into the roots of the hair with a sponge.

To be put up in 6-oz. amber panelled bottles and sold at a good price.

Nettle Hair-wash

Fresh common nettle .	ʒxvj.
Rectified spirit . .	Oj.

Chop the nettle small and macerate for a week in the spirit, strain, press, and add

Peru balsam . . .	♏xv.
Oil of bergamot . .	♏x.
Oil of ylang-ylang . .	♏v.
Essence of musk . .	♏v.
Otto of rose . . .	♏v.
Heliotropin . . .	gr. iij.

Filter bright.

Moustache-invigorator

Blistering-liquid (B.P.) .	ʒj.
Glycerine . . .	ʒj.
Nitrate of pilocarpine .	gr. j.
Jockey Club . . .	ʒij.
Rectified spirit to . .	ʒvj.

Mix the liq. epispastic. with 3 oz. of S.V.R. and the Jockey Club, add the nitrate and the glycerine. Shake well till dissolved, then make up.

ʒiss. of this sells for *2s. 6d.* It should be painted over the lip with a camel-hair pencil at bedtime, three applications being made at intervals of five minutes.

NOTE.—This resembles a well-known and widely advertised speciality, and, like it, is apt to blister when first applied; but blistering is frequently the precursor of hair-growth.

Lassar's Baldness-cure

First lather the scalp with tar soap, wash off with tepid then cold water, dry, and rub gently with

Sol. hydrarg. perchlor.	ʒj. ex gr. iss.
Glycerini . . .	ʒiss.
Aq. coloniensis . .	ʒiss.

M.

Dry and rub with 0·5 per cent. solution of naphthol in alcohol, and dress with the following oil:—

Salicylic acid . . .	ʒj.
Tincture of benzoin . .	ʒiss.
Neatsfoot oil to . .	ʒvj

Mix.

Linimentum Crinale
(Squire)

	Old Form.	New Form.
Cantharidin . .	gr. j.	gr. j.
Acetic ether . .	ʒvj.	ʒvj.
Dissolve and add		
Rectified spirit .	ʒiij.	ʒvj.
Castor oil . .	ʒj.	ʒij.
Oil of lavender .	♏xv.	♏xv.

Mix.

This is a most effective stimulant for the growth of the hair, which seldom fails. The old form so frequently blistered that the new one is now given in 'Squire.'

Alopecia Applications.—We describe a course of treatment generally applicable for baldness, which should be adopted at the time the falling-out of the hair is first noticed. The

following pomade may be applied daily, after washing the parts with soft soap and warm water :—

Resorcini	ʒss.–ʒj.
Vaselini	ʒij.
Lanolini	ʒij.
Zinci oxidi	ʒij.
Pulveris amyli	ʒij.

Ft. pasta.

After about a week this should be replaced by a stimulant such as the Pilocarpine Pomade recommended by Whitla :—

Pilocarpini hydrochlor.	gr. xx.
Aq. dest.	ʒij.

M. et adde

Lanolini	ʒx.
Olei petrolei	ʒvj.
Olei bergamot.	ʒss.
Olei verbenæ	ʒss.

Ft. unguentum.

The stimulation may be continued for three weeks or a month. At the end of that time, if there are no signs of renewed growth of hair, the first pomade should be again used for a week, and then the stimulant may be resumed. One good authority uses as a stimulant chrysarobin with or without the addition of salicylic acid, the former in a strength of 8 to 10 per cent., and the latter 2 to 5 per cent. in ointment or traumaticin. In severe and extensive cases he cuts the hair close and applies acetic acid mixed with chloroform or ether. Besnier uses the following prescription successfully :—

Hydrate of chloral	ʒj.
Ether	ʒvj.
Glacial acetic acid	ʒj.–ʒss.

Reduce the hydrate to powder and mix with the liquids.

Applications of this paint are at first made two or three times a week ; they are afterwards continued at longer intervals, and during these intervals a mixture is used consisting of

Oil of eucalyptus	ʒss.
Oil of turpentine	ʒss.
Crude petroleum	ʒj.
Rectified spirit	ʒj.

Mix.

In the later stages of the disease he uses sulphur ointment.

Bald Patches on the Scalp, arising from parasitic skin diseases (*compare* p. 75), are very difficult to rouse into hair-growth. The disease must first be eradicated by suitable treatment, such as the application of the following ointment:—

Ichthyol.	ʒj.
Hydrarg. oleat. (10 per cent.). .	ʒss.
Adipis lanæ	ʒss.

M.

This to be applied morning and evening on lint and covered with oiled silk.

After a week wash with ichthyol-and-tar soap, allowing the lather to dry on the parts. This treatment with the soap is to continue for months if necessary. It is exceedingly effectual in some cases.

Except in certain special cases of baldness due to microbic influence, too frequent washing of the hair is unnecessary and harmful. Once or twice a week is often enough for cleanliness, as well as for maintaining the strength of the hair. The same remark applies to brushing: prolonged brushing, especially with hard brushes, should be avoided. There is a common notion that greasing the hair is vulgar, so many persons fall into the other extreme, and never apply any dressing at all. After the hair has been washed it is certainly beneficial to apply some brilliantine or oil. When the hair is becoming rapidly thinned, a stimulant, such as ammonia or cantharides, added to the oil increases its efficacy.

COSMETICS AND POMADES FOR FIXING THE HAIR

Stick Cosmetic

I

Benzoated lard . .	ʒviij.
White wax . . .	ʒiv.
Pomade perfume . .	ʒss.

Melt the wax, add the lard, and stir until creamy; then add the perfume and pour into moulds.

II

White wax . . .	ʒiss.
Beef-tallow . . .	ʒiij.
Oil of bergamot . .	ʒj.
Oil of cassia . . .	ɱx.
Oil of thyme . . .	ɱv.

III

Resin	ʒxxx.
Suet	ʒx.
Ceresin . . .	ʒxl.
Vaseline oil . . .	ʒxl.
Palm oil . . .	ʒx.
Oil of bergamot . .	ʒj.
Oil of cassia . .	ʒiiiss.
Oil of lemon . . .	ʒiiiss.

Melt the solids, add the vaseline oil, strain, add the perfume, and mould.

The third is a Continental formula, and another style, given by a foreign author, is a mixture of 2 parts of white wax, 1 part of castor oil, and 1 part of larch turpentine, suitably perfumed. This for white. The golden cosmetic is coloured with ethereal solution of annatto, blond with burnt umber, brown with burnt umber and Cassel brown, and black with gas-black.

Brilliantine Cosmetic

I

Lanolini	℥iss.
Cetacei	ʒj.
Ol. ricini	℥iv.
Ol. amygdal. ess.	♏ij.
Ol. caryoph.	♏xx.
Ol. bergamot.	♏XL.

M.S.A.

II

Olive oil	℥x.
Spermaceti	℥iij.
Oil of bergamot	ʒij.
Oil of cloves	♏x.
Oil of rose-geranium	♏XL.

Saponaceous Cosmetic

White Castile soap (new)	℥v.
Water	℥j.
Mucilage of acacia	ʒvj.
Otto of rose	♏vj.

Shred the soap and put the water on it. Heat on a water-bath until uniform, then add the mucilage and the perfume, and cast into sticks. The dish should be tared, and when, after adding the mucilage, the contents weigh 6 oz. the cosmetic is ready for casting. Most of the water is evaporated.

Transparent Cosmetic is ordinary transparent soap (containing sugar) made to the soft side.

Vaseline Cosmetic

Ceresine	℥j.
Vaseline	ʒij.
Mutton-suet	ʒj.
Lard	℥ss.

Melt the substances in the order given, strain if necessary, and after perfuming pour into suitable moulds.

For white cosmetic white vaseline should be used, but for other colours the yellow. Burnt umber is used for the brown cosmetic, and drop black for black.

A Good Cosmetic Perfume

Oil of bergamot	ʒiiss.
Oil of petitgrain	ʒiiss.
Oil of lavender	ʒj.
Oil of cloves	ʒj.

Mix.

Superior Cosmetics

I

Wax	℥viij.
Cassie pomade	℥viij.
Tuberose pomade	℥viij.
Orris-root pomade	℥xvj.
Oil of bergamot	ʒiss.
Oil of geranium	♏x.

Melt the wax and stir in the pomades, using a gentle heat; then add the perfumes and mould.

II

Suet	ʒviij.
Wax	℥v.
Cassie pomade	℥viij.
Orris-root pomade	ʒiiss.
Reseda pomade	℥iiss.
Oil of neroli	♏v.
Oil of geranium	♏v.
Oil of bergamot	ʒij.

Prepare as No. 1.

III

Yellow wax	ʒviij.
Cassie pomade	ʒviij.
Orris-root pomade	ʒviij.
Violet pomade	ʒviij.
Jasmine pomade	ʒviij.
Tuberose pomade	ʒiiss.
Oil of bergamot	ʒiij.
Oil of geranium	♏x.
Oil of neroli	♏x.

Prepare as No. I.

IV

Yellow wax	ʒx.
Cassie pomade	ʒiiss.
Tuberose pomade	ʒj.
Rose pomade	ʒj.
Violet pomade	ʒxij.

Prepare as No. I.

Fixateurs Superfins

(Heliotrope)

Cassie pomade	ʒviij.
Vanilla pomade	ʒviij.
Rose pomade	ʒij.
White wax	ʒviij.
White vaseline	ʒiv.
Cocoa-butter	ʒx.
Oil of rose-geranium	♏x.
Heliotropin	gr. iij.

Melt the fats and the wax together, add the perfumes, mix, and cast into proper shapes.

(Lily of the Valley)

Rose pomade	ʒviij.
White wax	ʒiv.
White vaseline	ʒiv.
Cassie pomade	ʒiiss.
Orange pomade	ʒiiss.
Jasmine oil (floral)	ʒiij.
Ceresine	ʒiij.
Oil of linaloes	♏xv.
Oil of coriander	♏vj.
Oil of nutmeg	♏ij.

Prepare like the heliotrope.

(Orange)

Orange pomade	ʒxij.
White wax	ʒviij.
White vaseline	ʒiv.
Cassie pomade	ʒij.
Orange oil (floral)	ʒij.
Cocoa-butter	ʒx.
Oil of rose-geranium	♏x.
Oil of neroli	♏x.

Prepare as stated.

(Rose)

Rose pomade	ʒix.
White wax	ʒiv.
White vaseline	ʒiv.
Cocoa-butter	ʒvj.
Ceresine	ʒss.
Oil of rose-geranium	♏xv.

Prepare as stated.

(Violet)

Violet pomade	ʒviij.
White wax	ʒvj.
Jasmine oil (floral)	ʒiij.
Cassie oil (floral)	ʒiv.
Cassie pomade	ʒij.
Jasmine pomade	ʒj.
Orange pomade	ʒss.
Yellow beeswax	ʒij.
Yellow ceresine	ʒxiij.
White vaseline	ʒvj.
Cocoa-butter	ʒvj.
Oil of rose-geranium	♏xv.
Peruvian balsam	♏xv.

Prepare as stated.

(Ylang-ylang)

Rose pomade	ʒiv.
Vanilla pomade	ʒiiss.
White wax	ʒiiss.
White vaseline	ʒx.
Yellow beeswax	ʒvj.
Cocoa-butter	ʒiij.
Oil of ylang-ylang	♏x.

Prepare as stated.

French (not Turkish) oil of rose-geranium should be used in these fixateurs.

Bandoline

I

Pulv. tragacanth.	ʒj.
Spt. rectificat.	ʒij.
Ol. neroli	♏x.
Otto rosæ	♏x.
Aquæ ferventis	ʒxxiv.

Put the gum into a 40-oz. bottle and mix with the spirit in which the oils have previously been dissolved; then add the water and shake well. Glycerine ʒj. andwater ʒvij. may be added if a more liquid preparation of the new cream type is desired.

II

Japanese gelatin	ʒj.
Distilled water	ʒxliv.
Glycerine	ʒxv.

Steep the gelatin in the water, when soft add the glycerine, and warm until uniform; then add

Jasmine extrait	ʒvj.
Otto of rose	♏v.
Oil of neroli	♏iv.
Essence of musk	ʒj.

Strain.

Pommade Hongroise
(*Hungarian Moustache-wax*)

I

Spermaceti	ʒij.
White or yellow wax	ʒiiss.
Distilled water	ʒvj.
Gum arabic	ʒij.
Powdered soap	ʒx.
Glycerine	ʒij.
Bergamot and geranium oils, of each	ʒss.

Rub the soap and the gum with ʒiiss. of the water to a smooth fluid. Melt the wax and the spermaceti with the rest of the water in a water-bath, and mix with it the first compound (warmed) gradually, with vigorous stirring, keeping the wax mixture still hot. Then remove all from the water-bath, add the glycerine drop by drop, stirring assiduously all the time, and meanwhile incorporating the perfume. If the pomade has to be kept for a time, add benzoic acid ʒss. The pomade is much improved by keeping for a month before bottling, and rubbing it in a mortar twice a week. For black pomade add fine drop black, and for brown a little umber or sienna, rubbed smooth with the glycerine. For the white kind white wax only must be used.

II

Glycerini	ʒj.
Pulv. acaciæ	ʒiiss.
Pulv. sapon. alb.	ʒiiss.
Ceresini	ʒiss.
Aquæ	ʒx.
Ol. bergamot.	ʒss.
Ol. geranii	ʒj.
Ol. lavandulæ	ʒss.

Mix the water with the glycerine and bring to the boil. In this dissolve the powdered gum arabic, then add the ceresine in shreds and the powdered soap, stirring well until the whole is well mixed. Weigh the contents of the dish, and if not 17½ oz. add water to that weight. Stir and transfer the whole to a warm mortar. Triturate assiduously and add the perfume.

III

Yellow soap	ʒxxx.
Water	ʒxxxv.

Shred the soap and place in the water overnight, then heat gently to dissolve, and add

Potassium carbonate	ʒiss.

Keep hot, while melting the following:—

Ceresine	ʒviiss.
Japan wax	ʒiiss.
Castor oil	ʒiiss.

To this add half the soap solution, beating up thoroughly; next add a solution of

Gum arabic	ʒiiss.
Water	ʒv.

Supplemented by

Oil of bergamot . .	mxxv.
Oil of lemon . . .	mxx.
Oil of cloves . . .	ʒj.

Finally work in the rest of the soap solution ; mix most intimately.

LABEL

HUNGARIAN MOUSTACHE POMADE

An elegant Preparation which will retain the Hair in any desired form or direction.

Pommade Hongroise in Sticks

Glycerini . . .	ʒij.
Pulv. acaciæ . . .	ʒiij.
Ceresini	ʒv.
Ol. olivæ . . .	ʒvj.
Aquæ	ʒx.

Proceed as in the last formula, and when a translucent mass is obtained add

Liq. potassæ (s.g. 1·37) .	ʒij. ʒij.
Aquæ	ʒiij.

Continue to heat on a water-bath for an hour and a half. Cool a small portion of it quickly, and if too hard bring it to the proper consistence with water, or continue the heat if too soft. Perfume and mould it into the desired shape.

Another stick pommade hongroise can be made by dissolving half an ounce of yellow resin in as much spirit, adding it to 5 oz. of No. 11. Pommade Hongroise, previously melted, and warming further until most of the spirit is evaporated. Pommade hongroise should be kept for at the least three months before bottling. It should be sufficiently soft to spread when first made. On keeping it firms, and should be triturated in a mortar once a week. It may also be put up in collapsible tubes, but should for this purpose be quite soft.

Moustache Fixature

I

Mastic . . .	ʒij.
Sandarac . . .	ʒss.
Colophony . . .	ʒiss.
Rectified spirit . .	ʒiij.
Essence Jockey Club .	ʒss.
Ether	ʒij.

Dissolve and filter.

II

Colophony . . .	ʒss.
Tolu balsam . . .	ʒss.
Benzoin	ʒss.
Sandarac or elemi . .	ʒss.
Rectified spirit .	ʒiij.

Dissolve, strain, and allow to settle until clear.

MOUSTACHE FIXATURE

Wet the Stopper with the Fixing Fluid and apply to the Moustache, or apply with a Tooth Brush, then manipulate the Hair into any form that may be desired. A comb held under the Moustache will prevent any of the Fluid touching the face. If any of the Fluid gets on to the face or fingers a little oil will instantly remove it.

Spirit Gum

Resin	ʒj.
Castor oil . . .	ʒss.
Rectified spirit to . .	ʒiv.

Dissolve and perfume.

For theatrical people this is made with S.V.M. and sold at 2*d.* per oz. Add a little perfume.

HAIR-CURLERS

The introduction of the hair-curling pin has helped to give the old-fashioned bandoline the go-by, because it is unsuitable for applying with the pins. The following formulas are typical of the preparations now in use :—

Fluid

Potassii carbonat. . .	ʒj.
Liq. ammoniæ . .	ʒss.
Glycerini . . .	ʒij.
Spt. rectificat. . .	ʒvj.
Aq. rosæ ad . . .	ʒviij.

M.

Use aq. rosæ made from otto.

Powder

I

Dried carbonate of sodium	ʒx.
Powdered acacia . .	ʒiv.

II

Pulv. tragacanthæ . .	ʒj.
Pulv. boracis . .	ʒxvj.
Ol. rosmarini . .	ʒj.
Ol. origani . . .	♏xx.

Mix intimately, and divide each ounce into four packets.

Directions.—Dissolve the contents of the packet in a teacupful of hot water.

It need scarcely be explained that the reason why these preparations act as curlers is that, being alkaline, they saponify the natural fat of the hair, and when the latter becomes dry it is, in consequence, not so flexible, therefore keeps longer in curl. Borax is almost as good as carbonate of sodium for the purpose. The gum is a good addition—better, indeed, than glycerine ; *e.g.*, in the 'fluid' use mucil. acaciæ ʒiij. in place of glycerine. Tragacanth is also used ; in fact, No. 1. bandoline containing half the amount of gum and 5 per cent. of potassium carbonate is the latest form. A solution of common resin (ʒj. in S.V.R. ℥x., suitably perfumed) is another style. The directions for the use of these are 'Damp the hair before curling.'

HAIR-RESTORERS

By this title is understood those preparations which restore the colour of the hair. They are slow-acting dyes. In 1869 *The Chemist and Druggist* appointed a commission to analyse the more popular hair-restorers, with the result that the following were found to be the nature of the contents of original bottles :—

Allen's : Sulphur, 75·6 gr. ; lead acetate, 87 gr. ; glycerine-water, 8½ oz.

Rosetter's : Sulphur, 44·8 gr. ; lead acetate, 21·87 gr. ; glycerine-water, 10 oz.

A. Ross's: Litharge, 3·8 gr.; solution of potash, sufficient to dissolve; water to 8 oz.

The following formula is based on these analyses. The only direction in which variety may be introduced is in the perfume. Here heliotrope is given, because it happens to be the odour of the most expensive restorer.

Acetate of lead	ʒiss. or ʒj.
Milk of sulphur	ʒj. or ʒiss.
Glycerine	ʒij. or ʒj.
Heliotrope perfume	ʒij.
Water to	℥x.

Mix the powders intimately and rub up with the glycerine, gradually add the water, and lastly the perfume.

Some prescriptions give powdered cassia as an ingredient of Allen's preparation—about a grain to the ounce is the quantity usually mentioned—we know not upon what ground.

Precipitated sulphur does not mix well with water, and for that among other reasons some prefer the calcareous variety. But pure precipitated sulphur is used in the best preparations, and should be rubbed down with the glycerine and a little water before adding to the bulk.

One of the most celebrated French hair-restorers is the clear solution prepared as below. This is said to be less harmful than the foregoing preparation, but we question that; and at the worst plumbism from the use of lead hair-dyes is exceedingly rare. The following is the formula for the

Transparent Restorer

Acetate of lead	ʒj.
Saturated solution of sodium hyposulphite	a sufficiency
Glycerine	ʒj.
Rectified spirit	℥ss.
Rose-water to	ʒxx.

To the lead salt dissolved in 2 oz. of water add the solution of the hyposulphite until the precipitate formed is redissolved. Continue to add half as much more hyposulphite, then the rest of the ingredients.

This preparation should be bottled as soon as it is made, a drop of ether being put on the surface of the liquid in each bottle a few seconds before the cork is put in. Blue- or amber-coloured bottles should be used. The lead sulphide which is in solution is very prone to precipitation, even in the bottles,

especially when these are exposed to air and sunlight, and it is advisable, therefore, to bottle as directed, also to serve it as recent as possible.

Bismuth Restorer has been suggested in preference to lead preparations, but is not satisfactory. The best formula is :—

Subnitrate of bismuth	ʒiij. ℈j.
Water	℥ij.
Nitric acid	ʒv.

Mix the bismuth with the water in an evaporating-dish, heat, and add the acid drachm by drachm until solution is effected. Then pour into the following solution :—

Tartaric acid	ʒiiss.
Bicarbonate of sodium	ʒij. ℈iiss.
Water	℥xxxij.

Collect the precipitate on a calico strainer, wash well with water, drain, and dissolve in a sufficiency of strong solution of ammonia. To the solution add

Hyposulphite of sodium	℈v.
Glycerine	℥j.
Water	℥iij. or a sufficiency

The product should measure 8 oz. It is to be used like the lead restorers, and imparts a brown colour to the hair. For a black the application must be followed by ammonium-sulphide solution.

Another dye is made by mixing bismuth subnitrate 125 gr. with glycerine 1½ oz. ; heat on a water-bath and add 10-per-cent. potash solution, constantly stirring until the bismuth is dissolved. Then add strong citric-acid solution until the mixture is only faintly alkaline, and make up to 8 oz. with distilled water or a perfumed water. This solution depends for its dyeing effect upon the exhalation of sulphur compound from the skin and hair, so that the user should be recommended to take a sulphur tablet now and then !

Bismuth and lead restorers precipitate on exposure to light, and should be kept in amber-glass bottles.

Some people who are getting grey do not like the silver threads among the gold, and seek to get it all silvery at a sitting. This is how it is said to be done. First the hair is thoroughly washed with sodium-carbonate solution (1 in 40) and rinsed with warm water ; after drying, hydrogen-peroxide solution is applied. This treatment is repeated every other day until the hair is of a straw colour ; then a weak solution of aniline blue in 20-per-cent. alcohol is applied to neutralise the straw tint.

HAIR-DYES

The silver dyes are harmless and quick in action. They are now being displaced by preparations made from organic substances, but we still give first place to the silver compounds, of which the following are good examples :—

No. 1 Bottle

Acid. pyrogal.	ʒss.
Sodii metasulphit.	gr. x.
Aq. ad	ʒij.

No. 2 Bottle

Argent. nit.	℈j.
Liq. ammon. fort.	q.s.
Aq. ad	ʒij.

Dissolve the nitrate in ½ oz. water, add ammonia until the precipitate is redissolved, and make up to 2 oz. with water.

Another Form

No. 1 Bottle

Sodii sulphidi xtl.	ʒj.
Aquæ	ʒiij.

No. 2 Bottle

Argent. nit.	℈ij.
Cupri sulph.	gr. ¼
Liq. ammon.	ʒiij.
Aq. ad	ʒiij.

Hindoo Hair-dye

No. 1 Bottle

Acid. pyrogallic.	℈j.
Acid. nitric. dil.	♏v.
Aq. ad	ʒij.

No. 2 Bottle

Argent. nitrat.	gr. x.
Cupri sulphat.	gr. j.
Liq. ammon.	q.s.
Aq. ad	ʒj.

Parisian One-bottle Dye

Silver nitrate	ʒiss.
Nickel sulphate	gr. vj.
Strong ammonia solution	a sufficiency
Distilled water to	ʒvj.

Dissolve the salts in 2 oz. of water, add ammonia in excess, and make up.

Much used in India.

Silver hair-dyes with pyrogallic acid for the No. 1 bottle are preferable to others containing a sulphide, the odour of the latter being objectionable, and, on the whole, the dyes are not so good. The reason for the latter statement will be obvious to those who are familiar with the chemistry of silver. When a sulphide is mixed with the silver solution, a sulphide of silver is formed which varies in colour from pale brown to black, the colour changing remarkably on exposure to light. With pyrogallic acid, on the other hand, we get an immediate reduction of the silver salt to oxide or even to the metallic state, the colour varying from brown to black, the darker colour always resulting when sulphite of sodium is added to the pyrogallic solution. The product in this case is more permanent, and this sufficiently accounts for the

fact that the more popular dyes nowadays are those containing pyrogallic acid.

Two-bottle hair-dyes are put up in cases to hold a 1-oz. bottle (No. 1) and a 2-oz. (No. 2), or proportionately larger bottles, with two short-handled tooth-brushes of black and white bristle, and the directions for use are as follows :—

Cleanse the hair from all grease by washing it with warm water having a little washing-soda dissolved in it, and dry with a towel. Next pour a little of the fluid No. 1 into a saucer and apply with the white-haired brush; immediately afterwards use No. 2 in the same way with the black brush, avoiding as much as possible touching the skin. Wipe the parts round the hair receiving the dye with a damp sponge, and do not wash or grease the hair for several hours after its application. It is preferable to apply the dye at night.

The more silver there is in the preparation, the darker the dye is. Five grains of nitrate to the ounce is the proportion for brown dye. Three-bottle dyes are most permanent. No. 1 solution is pyrogallol gr. xij., S.V.R. ℥ss., water ʒx.; No. 2 the silver solution; and No. 3 sodium hyposulphite gr. viij. to water ℥j. *Black* silver solution: silver nitrate ʒj., ammonia solution ℥ss., water to ℥iv. *Brown*, ʒss. and ʒij. to ℥iv. *Blond*, ℈j. and ʒiss. to ℥iv. After washing the hair well with water softened with soda, brush on No. 1. Comb well, and in five minutes apply No. 2; ten minutes later apply No. 3. After three hours the hair may be washed with soap and water. If the dye is too dark, re-application of the hyposulphite solution lightens the colour. When the hair shows patches of grey it is difficult to strike the exact colour. The plan to follow in this case is as above noted.

For Blond Hair silver should not be used, but the following in the same manner :—

No. 1 Bottle		No. 2 Bottle	
Potass. permang. . .	ʒss.	Sodii hyposulphit. . .	℈j.
Aquæ	℥j.	Aquæ	℥j.

The hair is a keratinous substance which, like wool, can be dyed to any colour desired, but the person growing the hair is an inconvenient factor in the operation, because it is attended

by the use of acids and oxidising agents according to the nature of the colours desired and the basic substance employed. Moreover, the ordinary dyeing process is usually in two stages, and when man needs to dye his hair nowadays he wants one solution for the purpose and one application. To produce One-solution Hair-dyes it seemed a natural thing to try something made from phenylenediamine $C_6H_4(NH_2)_2$, because with certain reagents it produces brown and black colours. The trouble is that the resulting products irritate the skin badly—indeed, the Japanese Government has by decree prevented the importation of hair-dyes made from that substance. The azo black dyes are related to the phenylamines. The secret of the best one-solution hair-dyes is well kept. The most successful preparations vary in composition according to the colour desired, and resemble photographic developers in nature. For example, amidol (diamidophenol hydrochloride) 40 gr. and 60 gr. of sodium sulphite to an ounce of 10-per-cent. alcohol makes a brown stain. Eugatol is the name of a hair-dye composed of the sodium salts of ortho-amino-phenyl-sulphonate and para-amino-diphenyl-amino-sulphonate. Ortho-methoxy-para-amino-diphenylamine is the basis of another method, hydrochloric acid and hydrogen peroxide being the reacting agents. The experimenter who desires to see how this intricate organic synthesis works out in practice for the production of a one-solution hair-dye cannot do better than try the following process by Mr. E. W. Lucas, Ph.C., F.I.C. :—

Dissolve 2,200 gr. of cupric chloride in 11 oz. of distilled water and add 5 oz. of '·880' ammonia, and add (stirring constantly) to a solution of pyrogallic acid 3,000 gr., hydrochloric acid 22½ oz., and distilled water 32 oz. Then add (stirring vigorously) solution of ammonia, ·959, 6½ oz., and stir in hydrogen-peroxide solution (20 vol.) 16 oz. Make up to a gallon with distilled water. Keep in an open wide-mouth jar for fourteen days, stirring several times a day.

Test such preparations in various dilutions on human hair or sheep's wool, exposing to sunlight for a week, to determine the colours produced. *See* also the remarks on p. 887.

Mercurial Hair-dye

The following gives a black shade, but we do not recommend it :—

1

Perchloride of mercury	gr. vj.
Chloride of ammonium	gr. vj.
Distilled water	ʒiij.

Dissolve by the aid of a gentle heat and add a few drops of rose essence.

2

Hyposulphite of sodium	gr. x.
Water	ʒij.

Dissolve.

The hair, free from grease and dry, is treated with No. 1, allowed to dry, and then similarly treated with No. 2.

Golden Hair-dye

Solution of hydrogen peroxide, 10 vols.

After washing and drying the hair, this solution is applied carefully with a sponge, or small hair-brush, damped with it. The amount of bleaching produced depends upon the quantity of peroxide used. The application is repeated when the hair begins to darken again.

Non-metallic Dyes

(Brown)

Pyrogallic acid	ʒss.
Solution of ammonia	ʒij.
Rectified spirit	ʒj.
Water	ʒiij.

Dissolve the acid in the spirit, add the other ingredients, and mix.

(Chestnut)

Pyrogallic acid	ʒj.
Nitric acid	mv.
Rectified spirit	ʒss.
Water to	ʒiv.

Mix and dissolve.

This will keep clear for a long time. Label :—

THE IMPROVED

CHESTNUT HAIR-DYE.

Carefully prepared from a physician's recipe. Does not stain the skin. Absolutely harmless.

This colourless and odourless preparation gives to grey and white hair a deep chestnut colour.

Directions.—Wash and thoroughly rinse the hair; when dry apply the dye with a sponge. This should be repeated daily.

Gawalowski proposed as a hair-dye ammonium anacardate prepared from cashew-nuts (*Anacardium occidentale*), and it was supposed that the one-solution dyes were prepared from the cashew-nut, but that is an error.

Henna Hair-dye.—Henna is the powdered leaves of *Lawsonia inermis*, a shrub indigenous to tropical Asia. It contains a peculiar brown colouring matter of a tannic nature, and has long been used by women of the Orient for dyeing their nails and hair. It imparts a reddish-brown colour, like auburn, and it was supposed that the secret hair-dye which was made notorious in Paris about 1890, through Madame Patti and others submitting to the dyeing process, was a preparation of henna. It is stated that the powder is made into a paste with boiling water, and applied to the hair like a poultice. Next morning

the dry powder is brushed out, and a weak ammonia solution applied to the hair with a brush, then a 2-per-cent. potassium-permanganate solution is applied. The result is said to be a chestnut shade, but the process has been tried and proved to be a failure. Oriental women use the hot decoction along with a similar decoction of indigo-leaves.

DEPILATORIES

Superfluous hairs on the faces of women are a fruitful source of profit to skin-doctors, chemists, and hairdressers. Men do not resort to chemistry for their remedy, the razor giving them all the freedom they require. Most women abhor the razor, thinking that it stimulates the growth of the hair, makes it stiffer, darker, and so on. It does nothing of the kind, and a few years ago one of the most eminent of skin specialists, who had tried *x* rays, electrolysis, and all the depilatories, recorded in one of the medical journals that all have objections, but the razor none. Electrolysis is suitable for the long, coarse, and scattered hairs which oldish women sport, but the downy moustache of young women should not be treated in this way, as a permanent scar is produced. Another authority, however, states that thirty applications, at the most, of *x* rays, with occasional assistance of electrolysis (see *C. & D. Diary*, 1911), destroys the hair-bulbs.

The object of this book is not to sell razors, but, *inter alia*, to tell all about chemical depilatories. Practically there is only one class of such compounds, and their influence depends upon the presence of a sulphide and a caustic alkali. They are applied as a paste freshly prepared. The paste should be spread as thick as the blade of a knife over the parts from which the hair is to be removed, and allowed to remain for a minute or two. The softened hairs should then be scraped from the skin with a dull knife or bone spatula, the parts washed with warm water, and afterwards thoroughly dried. Cold-cream should then be applied to the reddened surface. The length of time the pastes should remain upon the skin is best determined by the severity of their action. They cause slight itching, which sensation is followed by an intense

burning; when the latter begins the paste should be removed. The effect of chemical depilatories is temporary. Their action extends no deeper than the epidermis; the hair-bulbs remain, and a new growth soon appears. Great care should be exercised in their application, and their effects should be carefully watched, for sometimes deep and painful ulcerations occur through their incautious use. The most effectual, or at least the most popular, depilatory is that which includes orpiment. It is a dangerous compound, for if the skin is broken arsenical poisoning may supervene. The barium-sulphide preparation is almost as effectual a depilatory, and is free from danger. The following is a selection of approved formulas :—

I

Quicklime	ʒxvj.
Pearlash	ʒij.
Liver of sulphur	ʒij.

Powder very finely and keep in a stoppered bottle.

Directions.—When required for use mix a small quantity with water to form a soft paste; apply to the spot, and in three minutes remove with a paper-knife. If the skin smarts much, apply a little cold-cream.

II

Barium sulphide	ʒj.
Zinc oxide	ʒj.
Starch	ʒij.

Mix.

III

Barium sulphide	ʒv.
Powdered soap	ʒj.
French chalk	ʒvij.
Starch powder	ʒvij.
Benzaldehyde	ʒiv.

Mix

IV

Sodium sulphide	ʒvj.
Powdered lime	ʒiij.
Starch	ʒij.
Powdered orris	ʒj.

Mix.

McCall Anderson's

Barium sulphide	ʒiss.
Zinc oxide	ʒvj.

Mix.

Martindale's

	Parts
Sulphide of barium (in fine powder)	1–3
Starch-powder	3

Mix.

Make into a paste with water at the time of using, spread over the part required, and remove at the end of five or ten minutes.

Neumann's

Slaked lime	ʒiss.
Orpiment	ʒiij.
Starch	ʒj.

Triturate to a uniform powder.

The sulphide of barium should be fresh. It can be prepared by making barium sulphate and its own weight of charcoal into a paste with linseed oil, rolling the paste into the shape of a sausage, and placing it on a bright fire to incinerate. When it has ceased to burn, and is a white-hot mass, remove from the fire, cool, and powder. Any of the foregoing may be made into Depilatory Pastes with soft

soap or glycerine. Another way is to take fresh-burned quicklime 30 parts, slake with about 15 parts of water, and when cold sift. Place the powder in a wide-mouthed bottle and add water to make a paste. Pass sulphuretted hydrogen through a tube to the bottom of the paste for an hour or two, then add glucose 70 parts and oil of lemon 3 parts. This paste does not keep well. A better is appended:—

Depilatory Pomade

Thallium acetate	ʒss.
Zinc oxide	ʒiij.
Wool-fat (hydrous)	ʒj.
Rose-water	ʒj.
Soft paraffin	ʒivss.

Dissolve the acetate in the water; triturate the oxide with the wool-fat, add the solution to this gradually and the soft paraffin alternately to form a smooth ointment.

To be applied to the part, and removed in a few minutes.

Liquid Depilatory

Tincture of iodine (1 in 10)	ʒss.
Venice turpentine	ʒj.
Castor oil	ʒiss.
Rectified spirit	ʒiss.
Collodion	ʒvj.

This is painted on the part, and as the film comes off, the hairs, if they behave themselves properly, come with the film.

See also Supplementary Chapter, p. 863, for still more recent wrinkles.

SHAMPOOING PREPARATIONS

These should contain a little free alkali and soap or quillaia, and are best when recently prepared. The addition of saffron or gamboge to liquids gives a nice colour, and transforms them into egg julep. It is well to note, although the fact is commonly known, that purely aqueous solutions of hard soap gelatinise quickly, but not when a fair percentage of spirit is present. Hard soap only should be used with hard waters.

Liquid Shampoos

I

Saponis mollis	ʒj.
Liq. potassæ	ʒj.
Spt. rectificat.	ʒij.
Ol. odorat.	q.s.
Aq. ad	Oj.

M.S.A.

II

Liquor. ammoniæ	ʒj.
Aq. coloniensis	ʒj.
Saponis mollis	ʒiv.
Spt. rectificat.	ʒvj.
Aq. ad	Oj.

Dissolve the soap in the spirit, add the rest of the ingredients, and filter.

III

Carbonate of ammonium	ʒss.
Borax	ʒj.
Hair-oil perfume	a sufficiency
Rectified spirit	ʒij.
Water	ʒxxv.

Dissolve the salts in the water and add the other ingredients.

IV

Carbonate of potassium	ʒj.
Solution of ammonia	ʒij.
Tincture of cantharides	ʒj.
Tincture of capsicum	ʒss.
Rectified spirit	ʒx.
Water to	Oiij.

Dissolve, mix, and perfume.

V

Ext. quillaiæ liq.	℥ij.
Aq. coloniensis	℥ij.
Glycerini	℥j.
Spt. rectificat.	℥iij.
Aq. rosæ	℥viij.

M. et filtra.

VI

Carbonate of ammonium	℥ij.
Rectified spirit	℥ij.
Glycerine	℥j.
Rose-water to	℥xvj.

Mix.

The American shampoos are generally made with Soft Soap extemporaneously prepared, as in the following tabulated formulas :—

	A	B	C	D
Cottonseed oil	—	24	26	14
Linseed oil	20	—	—	—
Olive oil	20	—	—	—
Caustic potash	9½	8	6	3
Rectified spirit	5	4½	5	2
Water	30	26	34	16½

Dissolve the potash in the water and heat to 70° C. Heat the oil to the same temperature, and pour the potash solution into it, stirring briskly for several minutes. Add the alcohol, stop stirring, but keep the mixture (covered) at 70° C. until it is clear and some of it put into boiling water dissolves without oil-globules separating. Set aside for a few days in a warm place.

Formula A gives the best soft soap; the others are cheaper. Any of these soaps dissolved in weak spirit (1 in 4) makes the shampoo. Liquid Soap is a mixture of A ℥xv., S.V.R. ℥vij., and water ℥ss., with the addition of an antiseptic if desired.

Egg Julep.—The household preparation which goes under this name is made from eggs, and is a good hair-cleanser that leaves the hair in a nice, flexible condition. A preparation of this character for bottle is made by mixing the yolks of two eggs with an ounce of glycerine of borax and gradually adding 4 oz. of water, then 3 oz. of honey-water in which salicylic acid ℈j. is dissolved, and 1 oz. of hard soap dissolved in 6 oz. of boiling water, making up to 20 oz. with water. Preparations sold retail are alkaline soapy solutions, such as the following.

I

Transparent or fine curd soap	ʒss.
Saffron	ʒss.
Water	a sufficiency

Shave the soap fine and boil it and the saffron in a quart of water. When the soap is dissolved, strain, and add, when cold, the following solution :—

Oil of lavender	♏xl.
Oil of cloves	♏x.
Otto of rose	♏xv.
Oil of bergamot	♏xv.
Essence of musk	ʒj.
Rectified spirit	Oj.

Make up the julep to 1 gal. with water.

II

Primrose soap	℈j.
Powdered borax	ʒss.
Solution of potash	ʒiij.
Solution of ammonia	ʒj.
Oil of Turkish geranium	♏xx.
Oil of lavender	♏x.
Tincture of saffron	ʒij.
Rectified spirit	℥iij
Distilled water to	Oj.

Shred the soap fine and just cover it with water. Allow to stand all night, and next morning rub it smooth in a mortar, add more water, the borax, and solutions; dissolve and strain. Then add the oils dissolved in the spirit, the tincture, and finally water to 1 pint. Solution of egg-yellow may be used in place of saffron.

No. I. is Piesse's formula given in the 'Art of Perfumery,' but here extended so as to include the ingredients of the perfume. It is an unworkable formula, and produces a solution which gelatinises. No. II. gives a preparation similar to that which barbers use, with the cloud of glistening crystals. Instead of saffron, which is only employed to colour, a few drops of a solution of the yellow dye, crocein B, or tr. cambogiæ may be used.

Dry Shampoos

I

Sapo. castil. alb.	ʒj.
Ol. lavand.	ʒj.
Spt. rectificat.	ʒviij.
Aq.	ʒiij.

Macerate for a day or two, filter, and add

Liq. ammon.	ʒj.

II

Liq. ammon. fort.	ʒss.
Ess. amygdal. amar.	ʒj.
Aq. coloniensis	ʒj.
Tr. quillaiæ (1 in 20)	ʒx.

Formulas are given in the Supplementary Chapter for dry shampoo powders (consisting essentially of starch and borax or mild alkali), which are dusted into the hair at night and brushed out in the morning. This is the most recent way of removing dirt and grease from the hair.

Shampoo-powders
(*Hair-wash Powders*)

I

Dried carbonate of sodium	ʒiss.
Dried curd soap	ʒiss.
Solution of orange	a sufficiency

This for a pint of warm water.

II

Powdered borax	ʒxvj.
Powdered camphor	ʒj.
Oil of bergamot	ʒss.

III

Powdered borax and soap powder, of each . .	1 lb.
Dried sodium carbonate .	4 oz.
Coumarin . . .	15 gr.
Heliotropin . . .	6 gr.

Put these up in 3-drachm packets to make a pint of shampoo.

Balsamic Shampoo

Rosemary-leaves (stripped from the stalks) . .	ʒxij.
Castile soap . . .	ʒiij.
Chloride of ammonium	ʒss.
Carbonate of potassium .	ʒiv.
Red sanderswood . .	ʒss.
Water . . .	Cong. iss.

Boil the rosemary, soap, and sanderswood in the water for twenty minutes. Then remove from the fire, and add the chloride of ammonium and carbonate of potassium. Stir well, and when cold strain.

Put this up in ½-pint bottles, and label to the following effect :—

> This Hair-wash thoroughly eradicates Scurf, and promotes a fine growth of Hair. To use it, put a tablespoonful in a pint of warm water, and wash the Hair with this mixture, shampooing well.

Shampooing-paste

Best white soap . .	ʒxiv.
Potassium carbonate .	ʒiiiss.
Water	ʒxxviij.

Shred the soap and mix with the carbonate and water; allow to stand overnight, then heat gently, stirring to make homogeneous, and add

Glycerine . . .	ʒvij.
Oil of lavender . .	ʒss.
Oil of bergamot . .	ʒss.
Essence of musk . .	ʒij.

Mix well.

May be made into *Egg Shampoo-lotion* by adding a pint of spirit and water to make 1 gallon, tinting with aniline yellow.

Shampooing-water

Beat up the yolk of a fresh egg, mix with it rose-water ʒx., and add

Liquid soap . . .	ʒss.
Potassium carbonate .	℈iiss.
Solution of ammonia .	ʒj.
Perfume . .	a sufficiency

This should be freshly prepared.

Children's Hair-wash Powder

Powdered borax . .	ʒxvj.
Conc. infusion of quassia	ʒj.

Evaporate the infusion with an ounce of the borax until dry, then mix with the rest of the borax. Instead of the quassia, carbolic acid ʒij. may be used.

ʒss. makes a quart of lotion.

DENTAL PREPARATIONS

Summary.—Remarks on the Teeth—Powder Dentifrices—Tooth-powder Perfumes and Colourings—Paste Dentifrices—Tooth Soaps and Tablets—Liquid Dentifrices—Unsaponaceous Dentifrices—Mouth-washes—Dental Requisites—Toothache-remedies.

MAN has thirty-two permanent teeth—viz., four incisors (cutting or front teeth, I), two canines (or eye teeth, C), four pre-molars, or bicuspids (B), and six molars (M)—in each jaw. They are arranged as follows :—

	M	B	C	I	C	B	M		
Upper . .	3	2	1	4	1	2	3	= 16	32.
Lower . .	3	2	1	4	1	2	3	= 16	

A tooth is divided into three parts—viz., the crown, the neck, and the root. The crown is placed above the gum, and is covered with enamel ; the neck is situated at the margin of the gum ; and the root is enclosed in the alveolus, or socket, and is covered with *cementum*. Upon the dentine substance of the tooth crown a surface layer is formed, remarkable for its density and hardness. This is the enamel, which is thickest at, and in the neighbourhood of, the cusps and cutting-edges of the teeth, and terminates at the neck, where it is slightly overlapped by the *cementum*. Dentine is a hard elastic substance, translucent in the healthy state, opaque in disease. The *cementum* resembles true bone, and forms a hard crust over the roots of the teeth, which are inserted into alveoli, or sockets, consisting of a series of cavities arranged along the border of each jaw. Each socket, whether for the single root

of one-fanged teeth, or for any one of the fangs of teeth having several, is enclosed by four walls—one situated towards the lips or cheeks, and one towards the tongue or palate, as the case may be, in the upper or lower jaw, and two which separate the alveoli individually. All these walls are perforated by innumerable minute openings for the passage of vessels to the outside of the fang, and at the deepest part of the sockets several larger openings convey nerves and blood-vessels to the pulp cavities of the teeth.

POWDER DENTIFRICES

The basic constituent of nearly all tooth-powders is precipitated chalk. We combine many things with it—acids and alkalies, soaps and oils, antiseptics and astringents—but the main thing is the chalk. Most of the precipitated chalk obtainable in this country is made in the process of softening hard domestic waters ; and it occurs as an apparently amorphous, but nevertheless crystalline, powder. Both light and heavy varieties are obtainable. It is the faces of the crystals which give precipitated chalk its importance as a dentifrice constituent ; for when rubbed upon the hard silicious enamel of the teeth it removes foreign matter without affecting the enamel injuriously. Prepared chalk, being amorphous and softer, is not so efficacious ; but it may with advantage be used by persons who are unfortunate enough to have 'soft teeth'—as those having short-lived enamel are often called.

Heavy magnesium carbonate is also frequently used in tooth-powders : it is neither better nor worse than precipitated chalk. Precipitated silica is an excellent non-alkaline substitute for chalk, particularly suitable for carbolic tooth-powder. Cuttlefish-bone powder is another and valuable friction adjunct, especially for those who are afflicted with tartar. So also is pumice powder; but it is generally agreed by dentists that pumice should only be used in extreme cases, never daily. Certain vegetable powders, soap, &c., are often used in tooth-powders, but not for the purpose of friction. Charcoal is,

however, and partly also on account of its deodorant property; a quality which is most probably chimerical. The presence of some detergent, such as soap or alkali, is now considered to be indispensable, for the teeth cannot be cleansed by mere rubbing. The use of calcium peroxide as an enamel whitener was covered by patent, No. 7479 of 1904 (now expired). Calcium perborate is also used. Up to 5 per cent. of it may be added to any tooth-powder. The examples which are given in the following pages sufficiently illustrate the various types of powder dentifrices. All should be made by sifting the powders finally through a No. 140 sieve, having first separately triturated the perfume with a portion of the powder, adding this to the bulk, and sifting several times through a No. 60 sieve.

Acid Dentifrice

Potassii bitart.	ʒvj.
Sacchar. lactis	ʒvj.
Carmini	gr. v.
Ol. menthæ pip.	♏xv.

Triturate the carmine well with a few drachms of the sugar of milk, then add the rest gradually, and the oil drop by drop; then the cream of tartar, and sift.

Alkaline Dentifrice

Calcii carb. præcip.	ʒx.
Magnes. carb. pond.	ʒx.
Pulv. cinchonæ	ʒx.
Ol. menthæ pip.	♏xl.

Mix well in a mortar the oil with an ounce of the chalk, gradually add the other powders, and sift several times.

Oil of peppermint is esteemed, especially on the European Continent, as a dentifrice perfume. It conveys a refreshing feeling to the mouth after a dentifrice is used, and is a valuable antiseptic; but in England peppermint alone is not appreciated, and it should be rounded off with some other perfumes. One of the best dentifrice perfumes is oil of wintergreen, which may be combined with other essential oils. Two drops of the wintergreen oil is enough for 1 oz. of powder.

One cannot triturate carmine too long with some of the powder of a dentifrice—chalk by preference if there is no sugar of milk in it—as thereby a fine shade of colour is obtained, and prolonged trituration is necessary to avoid a spotted appearance when the powder is wetted. It is better to use ammoniacal solution of carmine, or to damp the carmine, triturate, and dry before sifting.

Antacid Tooth-powders

I

Pulv. sapon. alb.	ʒj.
Sodii bicarb.	ʒss.
Cretæ præp.	ʒv.
Cretæ præcip.	ʒxj.
Carmini	gr. vj.
Ol. caryoph.	♏xv.
Otto rosæ	♏xv.

M.

II

Pulv. sodii bicarb.	ʒ
Pulv. boracis	ʒiij.
Pulv. sapon. alb.	ʒiij.
Pulv. terræ rosæ	ʒiss.
Cretæ præcipitat.	ʒxij.
Otto rosæ	♏xxxvj.

M.

Antiseptic Tooth-powders

I

Pulv. rad. irid. flor.	ʒiij.
Pulv. glycyrrh. decort.	ʒij.
Pulv. sapon. hispan. recent.	ʒvj.
Cretæ præcipitat.	ʒj.
Acid. boric.	ʒij.
Acid. benzoic.	℈j.
Magnes. carb. pond. ad	ʒiv.
Ol. eucalypti	♏xx.
Ol. rosæ virgin.	♏v.
Ol. menth. pip. ang.	♏v.
Ol. limonis	♏x.

Mix in the above order and pass through a fine drum sieve. If desired coloured add 20 gr. of carmine, which gives an elegant tint.

II

Dr. MacGregor's Prescription

Pulv. acid. boric.	℈ij.
Pulv. potass. chlorat.	ʒss.
Pulv. guaiaci	℈j.
Cretæ præcip.	ʒj.
Otto rosæ	♏j.
Magnes. carb. pond. ad	ʒj.

M.

III

Mr. Sewill's Prescription

Pulv. sapon. alb.	ʒij.
Pulv. iridis	ʒss.
Pulv. boracis	ʒij.
Cret. præcip.	ʒij.
Acid. carbol.	ʒss.
Ol. eucalypt.	ʒss.

M.

IV

Pulv. sapon. alb.	ʒj.
Cretæ præcipitat.	ʒviij.
Acid. carbolic.	ʒj.
Ol. eucalypti	ʒss.

Mix well and sift.

V

Resorcin	ʒss.
Salol	ʒj.
Powdered orris	ʒj.
Precipitated chalk	ʒij.
Carmine	gr. iij.
Oil of peppermint	♏vj.

Mix.

VI

Borated

Pulv. boracis	ʒiv.
Cretæ præcipitat.	ʒviij.
Pulv. myrrhæ	ʒij.
Pulv. iridis	ʒij.
Pulv. cinnamom.	ʒij.

Mix well and sift.

Aromatic Dentifrice

Magnes. carbon. pond.	ʒvij.
Cretæ præcip.	ʒxxiv.
Pulv. iridis flor.	ʒiv.
Pulv. sapon. hispan. recent.	ʒiv.
Carmin.	gr. xx.
Ol. caryoph.	ʒij.
Ol. cinnam.	ʒj.
Ol. origani pallid.	♏L.
Ol. rosæ geranii	ʒj.
Ol. rosæ virgin.	ʒj.
Ess. moschi	ʒj.

Mix well and pass through a fine drum sieve several times.

Aromatic Camphorated Dentifrice

Carmine	℈ij.
Flowers of camphor	ʒv.
Powdered cuttlefish-bone	ʒviij.
Powdered orris-root	ʒiv.
Precipitated chalk	ʒxl.
Oil of pimento	♏xl.
Oil of cloves	ʒss.
Oil of cinnamon	ʒss.
Otto of rose	♏xv.
Oil of caraway	♏v.

Triturate the carmine with the cuttlefish-bone until uniform, then add the camphor and orris-powder. Separately triturate the perfumes with 2 oz. of chalk, then mix the whole and sift three times.

Dr. Bell's Tooth-powder

Camphorated chalk	ʒij.
Orris-root powder	ʒss.
Powdered charcoal	ʒss.

Mix well.

Blackness Tooth-powder

Pulv. sapon. castil.	ʒij.
Pulv. iridis	ʒss.
Sodii biborat.	ʒij.
Cretæ præcipitat.	ʒij.
Ol. caryoph.	♏iij.
Ol. lavand.	♏x.
Ol. rosæ	♏v.

Misce bene.

Camphorated Chalk

Camphor.	ʒj.
Cretæ præcipitat.	ʒix.

M.

II

Camphor.	℥
Pulv. iridis	ʒij.
Cretæ præcipitat.	ʒv.

M.

The first recipe is the French form, and with more or less camphor (1 to 4 is common) is the one generally used. Reduce the camphor to fine powder with the help of rectified spirit, and gradually add the chalk, briskly triturating. Sift twice.

Carbolic Tooth-powder.—In making this dentifrice the crystallised acid should be triturated well with ten times its weight of the powder-basis, and the rest of the latter (previously triturated with the colouring) then added, with the perfume, and sifted. Under certain conditions, especially when the liquefied acid is used, the acid slowly crystallises from the powder. When carbolic acid is mixed with chalk or other alkalies it slowly combines with the bases to form a carbolate, whereby the antiseptic power is not only diminished, but the odour of the acid almost disappears. This is prevented by triturating the acid with starch (or orris-root) before adding chalk or any other powders. One of the most popular carbolic dentifrices is so made. Precipitated silica and fine white kieselguhr are also used. The latter is not only absorptive and neutral, but is superior to chalk as a friction agent, for each particle of

the kieselguhr is the skeleton of a diatom. It may be used in any of the recipes given here, and the dentifrices may be tinted with carmine or otherwise. The objection to it is that it is very light and fluffy. Terra alba (china clay) is also excellent for carbolic dentifrice, but lacks grit.

I

Kaolin	ʒxij.
Kieselguhr	ʒiv.
Carbolic acid	ʒss.
Powdered quillaia extract	ʒij.
Eosin	gr. iij.
Otto of rose	ɱx.

Dissolve the eosin in water ʒij., and triturate with 2 oz. of kaolin until well mixed. Mix the carbolic acid and otto with an ounce of kieselguhr by trituration, add to the coloured kaolin, also add the rest of the powders, triturate, and sift three times.

II

Pulv. myrrhæ	ʒj.
Terræ rosæ	ʒss.
Acid. carbol.	ʒss.
Pulv. sapon. castil.	ʒss.
Otto rosæ	ɱxv.
Ol. caryoph.	ʒss.
Cretæ præcip.	ʒxvj.

M.

III

Silicæ præcipitat.	ʒvij.
Pulv. sapon. alb.	ʒss.
Acid. carbolic.	℈j.
Camphor.	℈j.
Ol. gaultheriæ	ɱiij.

Rub the camphor and acid together and add ½ oz. of the silica, triturate well, and gradually add the rest of the ingredients and sift. May be tinted with rose pink.

IV

Terra alba (fine sifted)	ʒviij.
Orris-powder	ʒiss.
Powdered white soap	ʒss.
Carbolic acid	ʒss.
Camphor	ʒss.
Otto of rose	ɱx.
Solution of carmine	a sufficiency

Proceed as with No. III.

V. Soluble

Acid. carbolici	gr. vj.
Pulv. boracis	ʒj.
Pulv. sacch. lact.	ʒss.
Pulv. sacch. alb.	ʒss.
Pulv. cardamomi	gr. xv.
Ol. caryoph.	ɱj.
Terræ rosæ	q.s.

M.

VI

Cretæ præcip.	lb. ij.
Pulv. sacch. alb.	lb. j.
Acid. carbol.	ʒij.
Ol. gaulth., Ol. geranii, Coloris	a. q.s.

M.

VI

Acid. carbol. xtal.	ʒiij.
Pulv. sacch. alb.	ʒiij.
Ol. geranii	ɱxxiv.
Glycer. carmin.	ʒij.
Cretæ præcipitat.	ʒxxiv.

M.

Charcoal Tooth-powders

I

Levigated charcoal	ʒviij.
Powdered cinchona	ʒiv.
Oil of peppermint	ɱxv.
Oil of bergamot	ʒss.

Mix and sift.

II

Levigated charcoal	ʒiv.
Heavy magnesia	ʒviij.
Powdered sugar	ʒiv.
Cream of tartar	ʒj.
Oil of peppermint	ʒj.

Mix and sift.

These formulas are French; the second one provides a very refreshing preparation.

III

Pulv. ligni carb.	ʒiij.
Pulv. calami	ʒv.
Pulv. pumici	ʒiiss.
Pulv. catechu	ʒiiss.
Ol. bergamot.	♏x.
Ol. caryoph.	♏vj.

Mix the pumice and calamus with the oils in a mortar, add the charcoal, mix, then the catechu and sift.

IV

Cretæ præcip.	ʒviij.
Pulv. sapon. hispan. alb.	ʒij.
Pulv. oss. sepiæ	ʒiij.
Pulv. magnes. carb. pond.	ʒiij.
Pulv. ligni carbon.	ʒxij.
Acid. benzoic.	ʒij.
Acid. boric.	ʒx.
Ol. neroli	gtt. xij.
Ol. caryoph.	gtt. xx.
Ol. amygd. amar.	gtt. vj.
Ol. bergamot.	ʒj.
Otto rosæ	gtt. vij.

M.

No. IV. has been highly recommended by eminent dentists as a valuable antiseptic powder for the teeth and gums. A common charcoal tooth-powder is a mixture of levigated charcoal and camphorated chalk, equal parts. This may be improved by adding an ounce of potassium chlorate to each pound. The objection to charcoal as a dentifrice is that the powder sometimes gets between the teeth and the gums, and in time a blue rim may be formed there. Charcoal has no special advantage as a dentifrice.

Cinchona Dentifrice

Miller's

Cretæ præcipitat.	ʒiv.
Pulv. cinchonæ	ʒij.
Conch. præparat.	ʒij.
Pulv. myrrhæ	ʒj.
Pulv. caryophylli	ʒss.
Ol. cinnamomi	♏x.

Mix and sift.

Citroleine, or Lemon Dentifrice

I

Cretæ præcipitat.	ʒxvj.
Pulv. sacchar. alb.	ʒij.
Pulv. iridis	ʒiv.
Pulv. oss. sepiæ	ʒij.
Pulv. sodii bicarbonat.	ʒij.
Ol. limonis	ʒij.

Prepare like the next.

II

Tint a pound of precipitated chalk with a strong tincture of saffron and lay on a paper to dry, meanwhile preparing the following:—

Saccharin.	gr. x.
Pulv. lap. pumic.	ʒij.

Triturate well together and add

Pulv. iridis	ʒij.
Pulv. sodii bicarb.	ʒij.
Ol. limonis	ʒiij.

To this add the chalk, mix, and sift.

Coralline Dentifrice

Cretæ præcipitat.	ʒj.
Calcii phosphat.	ʒiij.
Pulv. sapon. alb.	ʒss.
Pulv. corall. rub.	ʒj.
Ol. neroli	♏vj.
Otto rosæ	♏v.
Ol. menth. pip.	♏iij.

Mix intimately and sift.

Court Dentifrice

Precipitated chalk	ʒLX.
Carmine	ʒij.
Otto of rose	ɱL.
Oil of pimento	ɱL.
Oil of cloves	ɱL.
Oil of cinnamon	ɱxx.
Oil of lemon	ɱxx.
Grain musk	gr. x.

Triturate the musk with the carmine and ½ oz. of chalk for five minutes, then add the oils one by one with about 1 oz. of chalk along with each oil. Continue trituration for at least ten minutes with half the chalk, add the rest, and sift three times.

An exceedingly nice tooth-powder, elegant in appearance, and of rich yet delicate odour.

Columbian Dentifrice

Precipitated chalk	ʒviij.
Powdered soap	ʒj.
Powdered cuttlefish-bone	ʒiv.
Powdered orris	ʒiv.
Oil of wintergreen	ʒss.
Solution of carmine	ʒj.

Mix the colouring with the precipitated chalk by trituration, sift three times, and set in a warm place to dry. Mix the soap, cuttlefish-bone, and orris, to this add the oil of wintergreen, and lastly the coloured chalk. Sift four times.

Crown Tooth-powder

Pulv. boracis	ʒss.
Pulv. sapon. alb.	ʒss.
Pulv. iridis	ʒj.
Pulv. oss. sepiæ	ʒiss.
Pulv. sacch. alb.	ʒij.
Cretæ præcipitat.	ʒvj.
Ol. gaultheriæ	ɱviij.
Ol. menth. pip.	ɱv.

Rub up the perfumes with 1 oz. of the chalk, gradually add the rest of the ingredients, and sift twice.

Dentenamel

Thymol.	Ðj.
Camphor.	Ðj.
Carmini	gr. xxiv.
Saccharin.	gr. x.
Pulv. iridis	ʒiss.
Pulv. sapon. alb.	ʒj.
Mag. carb. pond.	ʒss.
Cretæ præcipitat.	ʒxij.
Ol. geranii	ɱxx.
Ol. gaultheriæ	ɱiij.

Mix the carmine and the saccharin in a mortar with the magnesium carbonate until perfectly uniform. In another mortar mix the thymol and camphor, and when liquid add the oils; with this mixture triturate the chalk added slowly and in small quantities, at the same time putting in the magnesia mixture bit by bit. Then add the other ingredients and sift twice.

The Dentist's Tooth-powder

Cretæ præcip.	ʒx.
Magnes. pond.	ʒiij.
Pulv. iridis	ʒj.
Pulv. sacchar. alb.	ʒj.
Acid. tannic.	ʒj.
Pulv. saponis	ʒss.
Otto rosæ	ɱxv.
Ol. limonis	ɱv.
Carmini	gr. x.

M. S. A.

Eugenol Tooth-powder

Cocainæ hydrochloridi	gr. ij.
Eugenol.	ɱxvj.
Pulv. sacch. lactis	ʒj.
Cretæ præcipitat.	ʒj.
Calcii phosphat.	ʒij.

Put the cocaine in a mortar and drop on it about 20 minims of proof spirit, add the eugenol, and triturate with the rest of the ingredients. Sift twice.

This is a valuable powder for those much afflicted with toothache and sore gums.

Edenflowers Dentifrice

Pulv. saponis alb.	℥j.
Pulv. boracis	℥j.
Saccharini	gr. vj.
Pulv. oss. sepiæ	℥ij.
Pulv. iridis	℥iij.
Cretæ præcipitat.	℥xvj.
Ol. canangæ odorat.	♏xij.

M.S.A.

French Dentifrice

Pulv. camphoræ	℥xvj.
Cretæ præcipitat.	lb. v.
Carmin.	℥iss.
Ol. rosæ virgin.	℥ij.

M.

This should be passed through a No. 160 drum sieve after being thoroughly mixed. To bring out the beautiful colour the dentifrice should be passed through the sieve many times. It is an elegant preparation when properly made.

Havana Don's Dentifrice

Potass. permang.	gr. x.
Thymol.	gr. x.
Camphor.	gr. xx.
Pulv. pumicis	℥ij.
Cretæ præcip.	℥xvj.
Pulv. boracis	℥ij.
Extrait reseda	q.s.

Rub the thymol and camphor until liquid, then add the chalk. Mix the permanganate with the pumice, then incorporate all the ingredients, and sift.

Imperial Tooth-powder

Pulv. iridis	℥ss.
Pulv. oss. sepiæ	℥ss.
Pulv. sapon. alb.	℥j.
Cretæ præcipitat.	℥viij.
Liq. carmini amm.	℥j.
Ol. canangæ odorat.	♏v.
Otto rosæ	♏v.

Mix the chalk with the colouring by trituration, sift, and set in a warm place until dry. Mix the soap, cuttlefish, and orris; to this add the perfumes, then the coloured chalk. Finally sift three or four times.

Indian Dentifrice

Pulv. oss. sepiæ	℥ij.
Pulv. iridis flor.	℥ij.
Pulv. myrrhæ	℥ss.
Cretæ præcipitat.	℥viij.
Otto rosæ	♏xv.

Mix intimately and sift three times.

Munro Tooth-powder

Magnes. carb. pond.	℥ss.
Cretæ præcipitat.	℥ij.
Pulv. oss. sepiæ	℥ss.
Saccharini	gr. v.
Ol. menth. pip.	♏v.

Misce.

Myrrh Dentifrice

Precipitated chalk	℥iv.
Powdered myrrh	℥ss.
Powdered soap	℥ss.
Powdered orris	℥j.
Oil of peppermint	♏x.

Mix and sift.

Nasmyth's Tooth-powder

Rose-pink	℥j.
Powdered orris	℥ij.
Precipitated chalk	℥viij.
Otto of rose	♏x.

Triturate the otto and rose-pink with an ounce of chalk for ten minutes, add the rest of the ingredients, and sift four times.

(Another Formula)

Cretæ præcipitat.	℥xvj.
Cretæ præparat.	℥xvj.
Pulv. iridis	℥viij.
Terræ rosæ	℥ij.

Mix and sift three times.

The second formula is the original

of Mr. Nasmyth, an Edinburgh dentist, whose name is frequently spelled Naysmith and Naismith. Both of the formulas are, however, used in Scotland. The powder is preferred without otto. The mixing of the rose-pink with the chalk should be intimate, five or six siftings being none too many.

O.K. Dentifrice

Pulv. sapon. alb.	ʒss.
Pulv. oss. sepiæ	ʒss.
Pulv. myrrhæ	ʒss.
Cretæ præcipitat.	ʒiv.
Ol. menthæ pip.	♏v.

M.S.A.

Peerless Dentifrice

Precipitated chalk	ʒij.
Carbonate of magnesium	ʒss.
Borax	ʒss.
Bicarbonate of sodium	ʒss.
Orris-root	ʒij.
Thymol	gr. ij.
Camphor	gr. v.
Oil of peppermint	♏v.
Oil of cloves	♏ij.
Oil of lemon	♏ij.
Oil of eucalyptus	♏ij.
Creosote	♏j.

Dissolve the thymol and camphor in spirit and add to the previously well-mixed powders; then add the rest of the ingredients and sift three times.

Oriental Dentifrice

Precipitated chalk	ʒx.
Rose-pink	ʒivss.
Armenian bole	ʒiiss.
Powdered orris-root	ʒij.
Powdered cinchona	ʒj.
Powdered cassia	ʒj.
Powdered myrrh	ʒss.
Oil of lavender	ʒj.
Essence of musk	♏xx.
Otto of rose	♏j.
Oil of neroli	♏j.

Mix and sift.

Peruvian Dentifrice

I

Pulv. oss. sepiæ	ʒiv.
Pulv. cinchon. rub.	ʒj.
Pulv. sapon. alb.	ʒj.
Pulv. cassiæ	ʒss.
Pulv. camphoræ	ʒss.
Cretæ præcipitat.	ʒviij.
Ol. lavandulæ	ʒss.
Ess. moschi	ʒss.
Otto rosæ	♏v.

Mix thoroughly and sift.

II

Pulv. cinchon. rub.	ʒij.
Pulv. potass. chlorat.	ʒij.
Pulv. lapidis pumic.	ʒij.
Cretæ præcip.	ʒij.
Pulv. krameriæ	ʒj.
Pulv. sapon. alb.	ʒiij.
Ol. menthæ pip.	ʒiss.

M.S.A.

The second Peruvian Dentifrice is an excellent one for use by those who are taking mercurial medicines. It has been found to have a decidedly beneficial effect upon the teeth, which in such circumstances are apt to become loose.

Quinine Dentifrice

Pulv. rad. iridis flor.	ʒxij.
Pulv. cretæ præcipitat.	ʒxxxvj.
Pulv. oss. sepiæ	ʒiij.
Ol. rosæ virgin.	♏lxxx.
Quininæ sulphatis	ʒij.
Pulv. sapon. hisp. (fresh)	ʒij.
Ol. cinnamomi	♏lxxv.

All the powders to be finely levigated and mixed in the above order, the oils being intimately mixed before passing the powder through a fine sieve three times.

See the remarks regarding this dentifrice on next page.

Quinine Tooth-powder

Cretæ præcip.	℥xxx.
Pulv. myrrh.	℥j.
Pulv. cinchonæ	℥j.
Quininæ sulphat.	℥j.
Ol. geranii	℥ss.

M.

Rhatany Dentifrice

Pulv. iridis flor.	℥vj.
Pulv. oss. sepiæ	℥vj.
Pulv. cretæ præcip.	℥xxiv.
Pulv. krameriæ	℥ix.
Magnes. carb. pond.	℥vj.
Carmin.	℥iss.
Pulv. boracis	℥iij.
Pulv. antimonialis	℥vj.
Ol. rosæ virgin.	gtt. xxiv.
Ol. neroli	gtt. xvj.
Ol. cedrat.	gtt. viij.
Ol. cinnamom.	gtt. viij.
Ol. caryoph.	gtt. viij.
Ol. lavand. ang.	gtt. iv.
Ol. pimentæ	gtt. iv.
Tr. myrrhæ.	℥vj.
Extrait violæ	℥vj.

Mix well and pass through a fine drum sieve twenty times.

This is a superior preparation, which has been retailed at 6*d.* per oz.

Rose Tooth-powder

Cretæ præcip.	℥xxiv.
Pulv. sacch. alb.	℥viij.
Ol. rosæ geranii	℥ss.

Misce et colora.

Saccharin Tooth-powder

Carmine	℥ss.
Saccharin	gr. xxiv.
Magnesium carbonate (heavy)	℥iv.
Cuttlefish-bone	℥viij.
Otto of rose	♏x.

Mix thoroughly.

San Toy Tooth-powder

Pulv. sang. draconis	℥j.
Pulv. oss. sepiæ	℥xvj.
Sodii bicarbonat.	℥iv.
Cretæ præcipitat.	℥lxxx
Ol. menthæ pip.	℥ss.
Otto rosæ	℥j.

Talc Tooth-powder

Powdered talc	℥ij.
Powdered cochineal	℥ij.
Powdered cream of tartar	℥j.
Powdered alum	℥j.
Oil of peppermint	gtt. v.

Mix.

Carmine ℈ss. may be used instead of cochineal, omitting the alum.

Thymocalcol

Thymol.	gr. x.
Spt. vini rect.	℥j.
Cretæ præcipitat.	℥xvj.
Pulv. oss. sepiæ	℥iss.
Pulv. sapon dur.	℥ss.-℥j.
Magnes. carb. pond.	℥iij.
Magnes. peroxidi	℥vj.
Ol. rosæ geranii	℥ss.

Dissolve the thymol in the spirit and triturate well with 2 oz. of chalk; gradually add the rest of the chalk and the other ingredients, then sift thrice.

Vian's Tooth-powder

Magnesii carb. pond.	℥iss.
Cretæ præcipitat.	℥iss.
Pulv. sodii chloridi	℥ss.
Ol. anisi stellat.	♏x.

M.S.A.

The formula for Quinine Dentifrice on p. 142 was formerly in the possession of a West-end London chemist, now dead. It was a prescription of the late Prince Consort's dentist, and was used by him. It also has an association with Lord Byron in so far as his daughter Ada, Countess of Lovelace, was in the habit of buying it half-a-dozen boxes at a time. It was put up in turned-wood boxes, and labelled with the prescriber's

name, and there were many honourable associations in connection with it. The powder may be coloured with carmine, but it is much nicer uncoloured. To sell as a special dentifrice, at 1*s.* 6*d.* per box, or 2*s.* 6*d.* per 2-oz. globe-stoppered bottle.

Saponaceous Tooth-powders.—In addition to those already given, we arrange the following under the names, as far as known, by which they are sold:—

I

Pulv. sapon. alb.	ʒj.
Pulv. iridis	ʒij.
Cretæ præcip.	ʒv.
Ol. geranii	♏x.

Triturate well and sift five times.

II

Pulv. sapon. alb.	ʒij.
Pulv. iridis	ʒss.
Sodii bibor.	ʒij.
Cretæ præcip.	ʒij.
Ol. caryoph.	♏v.
Ol. lavand.	♏x.
Otto rosæ	♏v.

III

Pulv. sapon. alb.	ʒij.
Pulv. iridis	ʒss.
Sodii bicarb.	ʒij.
Cretæ præcip.	ʒij.

Mix and add

Acidi carbol.	ʒj.
Ol. eucalypt.	ʒij.

NOTE.—Only for use in special cases where a powerful antiseptic is necessary.

IV

Cretæ præcipitat.	ʒxij.
Magnes. carb. pond.	ʒiij.
Pulv. sapon. alb.	ʒvj.
Ol. geranii	ʒss.
Ol. origani	♏x.

Mix the chalk and magnesia with the oils in a mortar, then add the soap. Again triturate and sift four times.

V

Teaberry Dentifrice

Ol. gaultheriæ	♏x.
Pulv. sapon. alb.	ʒj.
Cretam præcip. ad	ʒiss.

This dentifrice is very popular in the U.S. Sold in wide-mouthed glass-stoppered bottle at 1*s.* 6*d.*

VI

Mr. G. H. Harding's Prescription

Pulv. cretæ præcip.	ʒj.
Pulv. sod. bicarb.	ʒj.
Pulv. iridis	ʒij.
Pulv. boracis	ʒij.
Pulv. sapon. hisp.	ʒj.
Pulv. terræ rosæ	ʒj.
Ol. rosæ	♏v.

Triturate well and sift.

VII

White-rose Saponaceous Dentifrice

Powdered white Castile soap	ʒiv.
Powdered orris-root	ʒiv.
Heavy carbonate of magnesium	ʒviij.
Precipitated chalk	ʒxvj.
Otto of rose	ʒss.

Triturate the otto with 1 oz. of the chalk before adding the rest of the powders; then sift three times.

VIII

Smokers' Tooth-powder

Menthol.	gr. iij.
Thymol.	gr. x.
Camphor.	gr. x.
Acid. salicylic.	ʒss.
Pulv. oss. sepiæ	ʒij.
Pulv. sapon. alb.	ʒij.
Cretam præcip.	ʒij.
Otto rosæ	gtt. iv.

Mix the first three ingredients together in a mortar, add the chalk and the other ingredients, triturating ten minutes before sifting.

Tannin Dentifrice

The following is a French recipe for a preparation which is useful as a tooth-powder when the gums are spongy :—

Sugar of milk	ʒxxx.
Carmine	ʒiiss.
Pure tannin	ʒss.
Oil of peppermint	♏xij.
Oil of anise	♏xij.
Oil of orange-flowers	♏vj.

Triturate the carmine with the tannin, add the sugar of milk gradually, and finally the oils.

Thymol Tooth-powder

I

Thymol	ʒss.
Camphor	ʒj.

Rub together until liquid, then add

Precipitated chalk	ʒxxx.
Powdered soap	ʒx.
Saccharin	gr. xv.
Vanillin	gr. vj.
Otto of rose	a sufficiency

Mix well and sift.

II

Thymol	ʒss.
Spt. rectificat.	ʒiij.
Cretæ præcip.	lb. iij.
Mag. carb. pond.	ʒiss.
Pulv. iridis	ʒv.
Pulv. sapon. alb.	ʒxij.
Ol. menthæ pip.	ʒj.
Ol. caryoph.	ʒss.
Ol. limon.	ʒss.
Ol. eucalypti	ʒss.

Mix as No. I., dissolving he thymol in the spirit.

Thymol in powder is exceedingly irritating in dentifrices. We have found that the best way of treating it is to mix with camphor to liquefy it, and then to triturate well with the chalk. Probably there is no more efficient deodorant than thymol, and with the addition of a little menthol a very refreshing dentifrice is obtained.

Miscellaneous Formulas.—The following table was compiled by the late Professor Bedford, of New York, from private prescriptions. It is a good selection of plain powders to which any compounder may add what perfume he pleases. The figures may be taken to mean drachms or ounces.

	I	II	III	IV	V	VI	VII	VIII
Precipitated chalk	16	24	32	12	12	—	16	32
Cuttlebone	16	6	—	—	4	16	—	16
Orris-root	16	6	6	8	8	16	8	16
Rose-pink	6	—	2	—	4	—	—	—
White soap	4	2	—	—	—	—	6	8
Myrrh	—	—	6	4	—	—	—	—
Cinchona	—	—	—	8	—	—	—	—
Sugar	—	—	—	—	4	—	8	—
Starch	—	—	—	—	—	—	16	—
Borax	—	—	—	—	—	—	2	—
Charcoal	—	—	—	—	—	16	—	—
Bicarbonate of sodium	—	—	—	—	—	—	—	8

Mr. E. M. Tod's Prescription

Cretæ præcipitat.	ʒx.
Magnes. carb. pond.	ʒiij.
Pulv. iridis	ʒj.
Pulv. sacch. alb.	ʒj.
Acid. tannic.	ʒj.
Pulv. cort. quercûs	℈ss.
Carmini	℈ss.
Pulv. saponis alb.	ʒss.
Otto rosæ	♏XL.
Ol. limonis	♏v.

M.S.A.

White's Tooth-powder

Cretæ præcipitat.	ʒxx.
Potass. bitart.	ʒiss.
Terræ rosæ	ʒiv.
Pulv. iridis	ʒvj.
Pulv. pumicis	ʒj.
Pulv. myrrhæ	ʒij.
Pulv. pyrethri	ʒij.
Pulv. potass. nitrat.	ʒij.
Pulv. boracis	ʒss.
Ol. verbenæ	♏xv.
Ol. caryoph.	♏xv.
Ol. lavand.	♏xv.
Ol. neroli	♏xx.
Ol. limon.	ʒss.

Triturate the oils with the rose-pink, add the rest of the ingredients gradually, and sift four times.

Mr. Small's Prescriptions

(For Adults)

Quininæ sulphat.	gr. ij.
Potass. chloratis	ʒiss.
Cretæ præcip.	ʒj.
Magnes. carb. pond.	ʒj.
Otto rosæ	♏iij.
Carmin.	gr. iij.

M.

(For Children)

Pulv. cinchon.	ʒij.
Potass. chlorat.	ʒss.
Pulv. iridis flor.	ʒss.
Cretæ præcip.	ʒj.
Otto rosæ	♏iij.

M.

(Another)

Quininæ sulphat.	gr. viij.
Pulv. potass. chlorat.	ʒj.
Pulv. oss. sepiæ	ʒj.
Pulv. carmin.	gr. xcvj.
Cretæ præcipitat.	ʒxvj.
Otto rosæ	♏xv.

Dissolve the otto in Ess. Jockey Club ʒvj. and add to the powders previously mixed intimately; then sift several times.

Tooth-powder Perfumes

It is a mistake to put too much perfume in a tooth-powder. Our experience in regard to otto of rose, for example, is not only that a minim to the ounce is quite enough, but that more is decidedly bad. To get the fine aroma of the rose in perfection the otto should be triturated with the chalk (ʒj. for each minim of otto) for at least ten minutes, and after the whole of the ingredients are added trituration should be continued for a few minutes before the powder is sifted. The oftener it is sifted the better. The same applies to other perfumes. Subjoined are good perfumes of the non-peppermint type :—

I

Ol. bergamottæ	ʒj.
Ol. limonis	ʒj.
Ol. lavandulæ	ʒj.
Ol. aurantii	ʒij.
Ess. moschi	ʒij.

M.

II

Ol. limonis	ʒvj.
Ol. bergamottæ	ʒiij.
Ol. aurantii	ʒiij.
Ol. neroli	ʒj.

M.

Tooth-powder Colourings

Pink or Red

I

Carmini	ʒss.
Liq. ammon. . . .	ʒviij.
Aq. ad	ʒxvj.

Triturate the carmine with the ammonia, gradually add the water, and filter.

II

Brazil-wood . . .	ʒij.
Water	Oij.

Boil for ten minutes and filter. To the filtrate add 2 dr. of alum dissolved in 1 oz. of hot water. Collect the lake which is precipitated, dry, and powder.

Brown

Liq. ammoniæ . .	ʒj.
Tr. catechu . . .	ʒvj.

M.

Golden or Yellow

Tincture of saffron or an aqueous solution of azo-orange dye. Tincture of turmeric is not nice.

Green

A. Add a few drops of solution of aniline blue to the yellow-coloured powder.

B. Ethereal solution of chlorophyll (1 in 8), and tincture of hempseed (1 in 4 of S.V.R.) are also useful.

Violet

A spirituous solution of aniline violet gives a good colour, and 2 per cent. ethereal solution of alkannin is also recommended by Dieterich.

In using carmine extemporaneously, for each pound of the powder take from a scruple to a drachm of carmine, according to the colour desired; rub with an ounce or two of chalk, and damp the powder with 1 to 3 dr. of solution of ammonia; stir well, add the rest of the powder, and sift several times. *Uncoloured dentifrices are now preferred, and are best.*

PASTE DENTIFRICES

Tradition long ruled the manufacture of tooth-pastes, so that they were virtually a mixture of a tooth-powder with a sweet excipient, such as honey or simple syrup with a little glycerine to keep it from hardening, or even glycerine itself. These are all more or less objectionable methods. Thus the saccharine excipients are apt to ferment, and once this happens all sorts of changes ensue, including decomposition of the chalk or any other carbonate which may be present. Glycerine alone attracts moisture too greedily, and should always be used diluted with three times its volume of water. So employed it is an ideal excipient. Any of the tooth-powders in the preceding section of this chapter (with the exceptions to be noted) may be converted into pastes with the following

Liquid Excipient.—Dissolve 8 gr. of saccharin in 1 oz. of rectified spirit and add 3 oz. of glycerine and 9 oz. of water in which 2 dr. of gelatin has previously been dissolved.

This excipient, or any excipient containing glycerine, should not be used with powders of which borax and any carbonate are constituents, because glycerine reacts with borax, liberating boric acid (in presence of water), which in its turn acts upon the carbonate, setting free carbonic-acid gas. The paste then becomes spongy.

Powders containing soap should be made rather to the thin side at first, because the soap gradually gets into solution, and the paste in consequence stiffens with age.

Tooth-paste Excipient

Gelatin cut small	ʒiij.
Moist Castile soap	ʒvj.
Saccharin	℈iiss.
Menthol	℈iiss.
Eucalyptus oil	ʒj.
Oil of wintergreen	ʒij.
Rectified spirit	ʒij.
Glycerine	ʒxiiss.
Water	ʒxiiss.

Soak the gelatin in half the water overnight and the saccharin and soap in the rest. Melt each next morning by gentle heat and mix. Dissolve the menthol and oils in the spirit and mix with the glycerine, which incorporate with the soap-and-gelatin mixture. Set aside in a covered pot for use after a week.

To make tooth-paste for tubes, use 6 parts of the above to 5 parts of precipitated chalk (or other suitable unscented powder); for pots, 36 parts to 50 parts of powder.

Antiseptic Dental Cream

Precipitated chalk	ʒv
Powdered white soap	ʒj.
Salicylate of sodium	gr. xx.
Oil of rose-geranium	♏iv.
Oil of wintergreen	♏iij.
Solution of carmine	♏ij.
Glycerine (4) / Water (1)	a sufficiency

Triturate the powders, add the oils, and continue trituration until well mixed; then make into a paste of the desired consistency with glycerine and water mixed in the proportions given, add the solution of carmine, and rub all together until a smooth, creamy paste results.

Areca Tooth-paste

I

Cretæ præcipitat.	ʒxvj.
Terræ rosæ	ʒvj.
Pulv. arecæ	ʒiij.
Pulv. sacchar. alb.	ʒiij.
Ol. caryophyll.	ʒss.
Ol. cinnamom.	♏xx.
Glycerini	ʒij.
Aq. rosæ	q.s.

Mix the powders, sift through a No. 140 sieve, sprinkle on the perfumes, and sift through a No. 40 sieve; then mass. This method to be followed when general directions only are given.

II

Cretæ præcipitat.	ʒvj.
Pulv. oss. sepiæ	ʒss.
Pulv. arecæ	ʒiss.
Ol. lavandul.	♏x.
Ol. cinnamom.	♏vj.
Otto rosæ	♏iij
Mellis	ʒij.
Glycerini	ʒiss.
Aq. rosæ	q.s.

M.S.A.

Carbolic Tooth-paste

I

Mellis	℥xvj.
Glycerini	℥iv.

Melt together and add the following, previously mixed and sifted :—

Cretæ præcipit.	℥xvj.
Pulv. iridis	℥iv.
Carmini	℈j.
Acid. carbol.	℈ss.
Ol. gaultheriæ	♏xx.
Ol. cinnamom.	♏v.
Spt. rectificat.	℥ss.

II

Precipitated silica	℥vj.
Carmine	ʒj.
Powdered orris	℥j.
Carbolic acid	℈ss.
Oil of wintergreen	♏viij.
Oil of peppermint	♏v.
Saccharin	gr. ij.
Glycerine	℥vj.
Rose-water	a sufficiency

Triturate the carmine and the saccharin with the silica and orris, and sift; add the other ingredients and make into a paste.

Charcoal Tooth-paste

Pulv. carbon. subtilis	℥iv.
Cretæ præcip.	℥ij.
Glycerini	℥j.
Ol. rosæ virg.	♏vj.
Mellis	q.s.

Mix the powders, add the otto, rub well; then add the glycerine and sufficient honey to make a paste.

Cherry Tooth-paste

I

Pulv. iridis flor.	℥j.
Pulv. cocci cacti	℈j.
Pulv. alum. ust.	℈ij.
Pulv. potass. bitart.	℥ss.
Pulv. cretæ rub.	℥ij.
Pulv. oss. sepiæ	℥j.

Mix the powders intimately and add 4 oz. of red-currant jelly, bringing the paste down to a suitable consistency with syrup of mulberry. The following perfume may be used :—

Ol. cassiæ	♏v.
Ol. ros. geran.	♏v.
Ol. caryoph.	♏iij.

II

Precipitated chalk	lb. ij.
Rose-pink	lb. j.
Powdered orris	℥iv.
Glycerine	℥iv.
Honey	℥viij.
English oil of lavender	℈ij.
Oil of cinnamon	℈ss.
Oil of bergamot	℈ij.

Mix and sift the powders and add the rest of the ingredients, beating up thoroughly well. Set aside for a month, and if tough add a little water.

III

Pulv. pumicis	℥ij.
Pulv. iridis	℥ij.
Pulv. myrrhæ	℥ss.
Ol. limonis	℈j.
Ol. caryoph.	℈ss.
Otto rosæ	♏v.
Liq. cocci	q.s.
Mellis	℥ij.
Aq. glycerinatæ	q.s.

M.S.A.

IV

Carmini	gr. xliv.
Pulv. iridis	℥j.
Magnes. carb. lev.	℥j.
Cretæ præcipit.	℥viij.
Ol. caryophyll.	℈ss.
Ol. rosæ geran.	♏xvj.
Ol. gaultheriæ	♏viij.
Ol. menth. pip.	♏x.
Glycerini	℥j.
Syrupi	℈j.
Aq. rosæ	q.s.

Triturate the carmine with the essential oils and add the chalk gradually, so that the powder may be uniformly coloured; then add

the orris and magnesia. Sift. Now make the sifted powder into a paste with the glycerine, syrup, and sufficient rose water.

V

Cretæ præcip.	ʒij.
Aluminis	℈ij.
Cocc. cacti	ʒij.
Aquæ	ʒj.
Mellis	ʒv.
Pulv. cinnamomi	ʒss.
Ol. caryophylli	♏xxx.

M.

The first of these formulas is the old-fashioned article in which the cochineal colour is converted into a lake during the compounding. It is not nice at all.

*

Saponaceous Cherry Paste

Melt together

Sarg's liquid glycerine soap	ʒxij.
Curd soap	ʒss.
Salicylic acid	ʒss.

Pour into a hot mortar, and incorporate

Precipitated chalk	ʒxxvj.
Solution of carmine	a sufficiency
Oil of wintergreen	♏xiv.

Beat thoroughly well.

White Cherry Dentifrice

Cretæ præcipitat.	ʒvj.
Cretæ præparat.	ʒvj.
Pulv. oss. sepiæ	ʒss.
Pulv. iridis	ʒj.
Pulv. pumicis	ʒj.
Ol. caryophyll.	ʒss.
Ol. cinnamomi	♏x.
Ol. bergamottæ	♏x.
Ol. neroli	♏x.
Ol. aurantii	♏x.
Ol. cedrat.	♏x.
Glycerini et aquæ rosæ aa.	q.s. ut fiat pasta

Coca Tooth-paste

French chalk	ʒiij.
Powdered soap	ʒj.
Powdered cuttlefish-bone	ʒss.
Tincture of coca	ʒss.
Solution of carmine	ʒj.
Oil of peppermint	♏x.
Oil of ylang-ylang	♏v.
Glycerine	ʒj.
Rose-water	a sufficiency

Mix the tincture with the oils and add to the powders, coloured with the carmine, and make into a paste.

Creta Cream

Cretæ præcipitat.	ʒvj.
Magnes. carb. pond.	ʒss.
Pulv. sapon. alb.	℈iv.
Ol. caryophyll.	♏ij.
Ol. cassiæ	♏ij.
Ol. aurantii	♏ij.
Ol. rosæ geranii	♏vj.

Mix thoroughly and sift, then make into a paste with

Glycerini	ʒj.
Aq. rosæ	q.s.

Damask Rose Tooth-paste

Cretæ præcipitat.	ʒxij.
Pulv. iridis	ʒx.
Ol. caryoph.	ʒss.
Otto rosæ	ʒss.
Ol. menth. p	♏x.
Ol. lavand.	♏x.
Liquor. cocci	ʒj.
Glycerini	ʒiij.
Elixir saccharini	ʒiss.
Aq.	q.s.

M. S. A.

Dentalba

Carmine	℈j.
Solution of ammonia	ʒss.

Triturate in a mortar and add gradually

Precipitated chalk	ʒxij.
Prepared chalk	ʒvj.
Orris-powder	ʒvj.

Sift twice and add the following mixture :—

Vanillin	gr. ij.
Coumarin	gr. j.
Otto of rose	♏xij.
Oil of cloves	♏xij.
Tincture of benzoin (simp.)	ʒiij.

Mass with

Glycerine	ʒij.
Rose-water	a sufficiency

English Tooth-paste

Cretæ præcipitat.	ʒxx.
Pulv. oss. sepiæ	ʒv.
Pulv. pumicis	ʒij.
Pulv. iridis	ʒx.
Pulv. caryophyll.	ʒiij.
Pulv. cinnamomi	ʒiij.
Liq. carmini (Ex. Phar.)	ʒj.
Ol. caryophylli	ʒiij.
Otto rosæ	ʒss.
Mellis	ʒx.
Glycerini	ʒiv.
Aq. chloroformi	q.s.

M.S.A.

Eucalyptus Tooth-paste

Precipitated chalk	ʒiij.
French chalk	ʒij.
Powdered soap	ʒiss.
Arrowroot	ʒiss.
Solution of carmine	ʒiss.
Oil of eucalyptus	ʒss.
Oil of peppermint	♏xv.
Oil of rose-geranium	♏xv.
Oil of cloves	♏v.
Oil of anise	♏v.
Glycerine	ʒiss.
Chloroform-water	a sufficiency

Make a paste.

Myrrhine Tooth-paste

Precipitated chalk	ʒvj.
Powdered myrrh	ʒvj.
Arrowroot	ʒss.
Oil of cinnamon	ʒss.

Glycerine and chloroform-water, of each a sufficiency to make a paste.

Floral Dentine

Cretæ præcipitat.	ʒx.
Pulv. iridis	ʒv.
Pulv. oss. sepiæ	ʒiiiss.
Liq. carmini	ʒij.
Ol. limonis	ʒij.
Ol. rosæ geran.	ʒj.
Mellis	ʒiij
Glycerini	ʒj.
Aq. menthæ pip.	q.s.

M.S.A.

Harlan's Tooth-paste

Cretæ præcipitat.	ʒij.
Pulv. sacch. alb.	ʒj.
Pulv. boracis	ʒj.
Pulv. iridis	ʒij.
Pulv. sapon. alb.	ʒss.
Pulv. oss. sepiæ	ʒij.
Pulv. myrrhæ	ʒj.
Carmini	gr. x.
Ol. gaultheriæ	ʒj.
Glycerini	ʒj.
Mellis	ʒj.

Mix all the powders except the carmine, which with borax ℈j. dissolve in a little water and add to the powders along with the oil; then make into a paste, using as much rose-water as is necessary. The quantity of wintergreen is excessive for English taste.

Odontine

Carmine	ʒss.
White soap	ʒiij.
Proof spirit	ʒiij.

Dissolve by the heat of a water-bath and add to the following :—

Precipitated chalk	ʒvj.
French chalk	ʒiij.
Oil of peppermint	♏xl.
Oil of cinnamon	♏x.
Oil of geranium	♏xv.
Glycerine	ʒiss.
Proof spirit	a sufficiency

Make a paste.

Red Rose Tooth-paste

Cretæ præcipitat.	℥iv.
Magnes. carb. pond.	℥iv.
Pulv. iridis	℥iv.
Pulv. pumicis	℥iv.
Pulv. oss. sepiæ	℥iv.
Glycerini	℥iij.
Mellis	℥viij.
Aq. rosæ	℥iv.
Carmini	ʒij.
Liq. ammon.	℥ss.

Rub the carmine and ammonia together in a mortar, then add the liquids in the order given, and finally the powders, and perfume with otto rosæ ʒj. and ol. ros. geranii ʒss.

The pumice may be omitted and replaced by precipitated chalk.

St. Michael's Tooth-paste

Pulv. carbon. lig.	℥ss.
Pulv. cinchonæ	ʒij.
Pulv. irid. flor.	ʒij.
Pulv. potass. bitart.	ʒij.
Pulv. myrrh.	ʒj.
Mellis	q.s. ut fiat pasta

M.S.A.

Saponaceous

I

To each ounce of any white saponaceous tooth-powder add saccharin elixir ♏x., and glycerine ʒiss., and make into a paste with a sufficiency of water.

II

Powdered pumice	℥j.
Powdered cuttlefish-bone	℥iss.
Powdered myrrh	℥iij.
Powdered orris-root	℥iiiss.
Precipitated chalk	℥vj.
Curd soap	℥viij.
Glycerine	℥xij.
Rose-water	℥x.
Otto of rose	ʒj.
Oil of cloves	ʒij.

Shred the soap, mix it with the glycerine, and heat on a water-bath till uniform; then add the water and mix with the powders, finally adding the perfume.

Thymol Tooth-paste

Thymol	ϑj.
Rectified spirit	ʒij.
Precipitated chalk	℥xxv.
Carmine solution	♏xv.

Dissolve the thymol in the spirit, add this and the carmine to the chalk, triturate well, and sift; then mass with

Tooth-paste excipient	℥xviij.

Vigier's Tooth-paste

French chalk	℥vj.
Cream of tartar	℥ss.
Cochineal-powder	℥ss.
Glycerine	℥v.
Honey	℥x.

Mix.

Vilbliss's Cream Dentifrice

Magnes. carb. pond.	℥ij.
Pulv. boracis	℥iss.
Cretæ præcipitat.	ʒj.
Pulv. sapon. alb.	ʒvj.
Otto rosæ	♏ij.
Ol. iridis	♏ij.
Ol. caryophyll.	♏ij.
Ol. rosæ geranii	♏ij.
Liq. carmini	♏x.
Mellis	℥iss.
Aq. rosæ	q.s.

Mix thoroughly to make a thin paste, allowing to stand in the mortar a few days for stirring.

The Nameless

To the following the retailer may apply any name he chooses :—

I

Pulv. saponis	℥j.
Magnes. carb. pond.	℥ij.
Cretæ præcip.	℥vj.
Ol. neroli	♏xx.
Glycerini	℥ij.
Aq. flor. aurant.	q.s.

Fiat pasta.

II

Carmini . . .	ʒss.
Cretæ præcipitat. . .	ʒviij.
Pulv. iridis . . .	ʒiij.
Pulv. saponis . . .	ʒv.
Ol. cinnamomi . .	ɱx.
Ol. menth. pip. . .	ʒij.
Glycerini,	
Aquæ rosæ aa. q.s. ut fiat pasta	

The carmine should be dissolved in a sufficiency of ammonia solution.

TOOTH SOAPS AND TABLETS

Tooth-soaps have within recent years become exceedingly popular, but their manufacture is almost confined to soap-makers, because a soap-stamping mould is required in making them. They are either suitably perfumed and coloured soap, or consist of tooth-powder mixed with its own weight, or more, of neutral soda soap while the latter is hot and pasty. It is then dried, milled, cut into pieces suitable for the mould, and stamped. In a retail way Tooth-soap may be made by shredding 1 lb. of the best household soap and placing it in a basin with its own weight of water and 1 oz. of glycerine. Heat gently until the soap is dissolved and the contents of the basin weigh 24 oz.; transfer to a large warm mortar, and work in 1 lb. of tooth-powder by assiduously beating. Do not cease beating up until the whole of the ingredients are intimately mixed and a uniform mass is obtained. As the consistency of soap varies the quantity of powder used must be adjusted to suit, more being added if the mass is too soft, but if too hard proof spirit should be used to soften. Next transfer the mass to a large marble slab, and flatten it with a rolling-pin aided by a sprinkling of soap powder. Set aside in a warm place—about 80° F.—and roll every day until it shrinks but little, cut, and mould into cakes.

Another and simpler method is illustrated in the two following formulas, in either of which colouring and perfume may be added, as desired, to the powders when compounding :—

A

Precipitated chalk . .	ʒxv.
Orris-root powder . .	ʒiiss.
Powdered pumice . .	ʒx.
Powdered Castile soap .	ʒv.
Glycerine . . .	ʒj.
Rectified spirit . .	ʒxij.

B

Precipitated chalk . .	ʒxviij.
Powdered pumice . .	ʒx.
Powdered Castile soap .	ʒv.
Glycerine . . .	ʒj.
Rectified spirit . .	ʒxij.

Mix the soap in a mortar with the glycerine and the spirit, and add to this the powders, previously triturated with perfume and colouring matter, and sifted. Beat well together, and occasionally for six hours, then mould, and dry the pieces by exposure in a dry room (temperature about 60° F.) for twenty-four hours. Finally, varnish each piece with tincture of Siam benzoin (1 in 5), coloured red (with dragon's-blood) if desired.

Tooth-soaps should be well charged with aromatic oils, at least 10 minims of the perfume to the ounce being required to cover the soapy taste and to make them antiseptic and pleasant in use.

Tooth-blocks may also be made with a saponaceous tooth-powder and liquid excipient (p. 148), or with plain powder and an excipient composed of equal parts of glycerine, glucose, hard soap, and water. Prepare as above.

Tooth-tablets are tooth-powders, generally without soap, made into a stiff paste with proof spirit, aided by compound tragacanth powder. Two drachms of the latter to a pound of tooth-powder suffices. The paste is moulded into suitable shapes, and the cakes dried. They crumble when pressed in the palm of the hand. Lyon's tooth-tablets are the forerunners of such preparations.

Solid Tooth-soap

Cretæ præcipitat. . .	ʒj.
Carmin.	℈j.
Liq. ammon. . . .	ʒj.
Pulv. saponis alb. . .	ʒij.
Ol. menthæ pip. . .	ʒss.
Spt. rectificat. . .	ʒiij.

Make into a paste and mould.

A softer soap may be made by using equal parts of spirit and glycerine.

Liquid Tooth-soap

Lin. saponis rect. . .	ʒiij.
Tr. myrrhæ . . .	ʒss.
Glycerini . . .	ʒss.
Ol. menth. pip. . .	♏x.
Liq. carmin. . . .	q.s.

M.

LIQUID DENTIFRICES

Custom, rather than the greater utility, has caused solid dentifrices to be preferred by Britishers. As a matter of fact, the teeth do not require daily use of solid dentifrices, for liquid preparations give that amount of assistance to the brush which ensures the removal of matter adhering to the

teeth, while the detergent and antiseptic properties of the liquid dentifrice provide that refreshing influence which is so much desired. Solid dentifrices may be injurious ; the liquid preparations never are.

For these reasons alone the sale of liquid dentifrices should be encouraged ; in addition they are more profitable and more convenient in use. A distinction should be noted between Liquid Dentifrices and Mouth-washes, strictly so called. The former are always used with the brush, while the latter seldom are, but are generally used in mixture with water for hardening the gums or refreshing the mouth after smoking. We group these preparations separately.

In this section we place first those liquid dentifrices which are foaming or saponaceous. Quillaia-bark is the source of the frothing character in the former, and soap in the latter case. Quillaia contains a large amount of saponin, a principle contained in many other vegetable substances—*e.g.*, senega, tea-seed cake, and soap-nuts ; but none is so convenient or suitable as quillaia. Saponin alone may be used : 1 = quillaia 20.

Quillaia-bark is exceedingly tough and difficult to powder, so that it should be bought coarsely powdered. It has been determined that a spirituous menstruum containing not more than 25 per cent. of alcohol is most suitable for exhausting the bark and for preserving the saponin. If a colourless preparation is desired the tincture of quillaia must be shaken with bone-black in small pieces, 1 oz. to each pint of tincture ; then filtered. As a rule liquid dentifrices are coloured pink (cochineal and fuchsine are good colourings) or golden (with saffron). Green is not a desirable colour for dentifrices. Sometimes these coloured dentifrices become bleached, but this is due to exposure to intense light.

Tincture of Quillaia for use in liquid dentifrices is made by macerating 4 oz. of the coarsely powdered bark in a mixture of rectified spirit 4 oz. and water 16 oz. for six days, and filtering ; or it may be made by percolation. The marc yields an ounce or two on pressure, but it should not

be further washed with menstruum. This tincture is to be used in the first formula. The other formulas give abundant variety of flavour and appearance.

'Our Own'

I

Ol. santal.	♏iv.
Extrait violæ	ʒss.
Ess. vanillæ	ʒss.
Tr. iridis	ʒij.
Tannin.	ʒss.
Spt. rectificat.	ʒviij.

Dissolve and add

Ras. santal. rub.	ʒj.
Glycerini	ʒj.
Tr. quillaiæ	ʒxvj.
Aq. rosæ ad	Oij.

Macerate for a week and filter.

II

Quillaiæ	ʒj.
Spt. rectificat.	ʒvij.
Aquæ	ʒx.

Macerate for a week, filter, and add

Cocci cacti	gr. xvj.
Ol. gaultheriæ	ʒj.
Glycerini	ʒiv.
Aq. menthæ pip.	ʒviij.

Previously macerated for a week. Filter the mixture.

III

Borax	ʒss.
Saccharin	ʒss.
Solution of potash	ʒj.
Distilled water	ʒxxij.

Dissolve and add the following solution :—

Menthol	gr. xv.
Eucalyptus oil	♏xv.
Oil of cassia	ʒss.
Tincture of cudbear	ʒij.
Rectified spirit	ʒviij.

Mix and filter.

IV

Tr. quillaiæ	ʒvj.
Ol. gaultheriæ	ʒj.
Acid. carbolic.	ʒvj.
Ol. anisi	ʒij.
Ol. cinnamomi	♏xx.
Ol. menth. pip. ang.	♏xl.
Glycerini	ʒj.
Alcohol. absolut.	ʒj.
Tr. myrrhæ	ʒj.
Aq. destillatæ	ʒvj.
Spt. rectificat. ad	ʒxl.

M.S.A.

V

(Sometimes called 'Borol,' but this is a protected title.)

Boric acid	ʒv.
Dry alcoholic ext. of quillaia	ʒj.

Triturate with the following:—

Glycerine	ʒvj.
Soft soap (B.P.)	ʒiiss.
Rectified spirit	ʒxx.
Salol	gr. xv.
Oil of peppermint	ʒiiss.
Powdered rhatany	gr. viij.

Macerate for a week and filter.

Rose Dentoline

Quillaia	ʒij.
Glycerine	ʒij.
Eau de Cologne	ʒviij.
Rose-water	ʒxxxij.
Solution of carmine	ʒiij.
Essence of vanilla	ʒss.
Oil of wintergreen	♏xx.
Oil of cloves	♏x.

Dissolve the oils and essence in the eau de Cologne, add the rose-water, and in the whole digest the quillaia for two weeks, shaking occasionally. Finally add the gly-

cerine and colouring solution, and filter.

The Carmine Solution is made by rubbing 1 dr. carmine with ½ oz. solution of ammonia till dissolved, then adding 3½ oz. water.

Rosebery Dentifrice

Quillaia	℥ij.
Glycerine	℥iss.
Salicylate of sodium	ʒij.
Oil of bergamot	ʒss.
Oil of wintergreen	ʒss.
Oil of cloves	♏viij.
Solution of carmine	ʒj. (or q.s.)
Rectified spirit	℥vj.
Rose-water to	℥xvj.

Macerate the quillaia with 5 oz. spirit, the water, and glycerine for seven days and add the oils dissolved in the remaining ounce of spirit; strain and press. To the liquor add the salicylate of sodium and sufficient solution of carmine to colour. Shake thoroughly and filter through a wet filter-paper sprinkled with talc, returning the filtrate until it runs clear, and pour enough proof spirit through the filter to make 16 oz.

Foaming Carbolic Dentifrice

Quillaia, in coarse powder	℥iv.
Glycerine	℥iij.
Rectified spirit	℥v.

Macerate for four days and add

Carbolic acid, in crystals	ʒj.
Oil of rose-geranium	♏x.
Oil of cloves	♏x.
Otto of rose	♏x.
Oil of cinnamon	♏x.
Tincture of rhatany	℥iss.
Rose-water	℥xxx.

Macerate for another four days and filter.

For tincture of rhatany ½ oz. of tincture of cochineal may be substituted.

Liquid Odontine

Tr. quillaiæ	℥x.
Syr. aurantii	℥vj.
Ol. cassiæ	♏xx.
Ol. caryophyll.	♏vj.
Ol. lavand.	♏vj.
Ol. carui	♏xv.
Ol. gaultheriæ	♏x.
Ol. menth. pip.	♏xxx.
Ess. ananassæ	♏xxx.
Liq. cocci	ʒj.

M.

The following are suitable labels for the foregoing :—

LIQUID

DENTIFRICE

A Deliciously Flavoured

ANTISEPTIC TOOTH WASH

for General Use.

Directions.—To ensure clean White Teeth, and effectually to deodorise decayed parts, sprinkle a few drops on a wet tooth-brush and use morning and evening.

PREPARED BY

(*Name and Address*)

LIQUID

CARBOLIC DENTIFRICE

FOR

PRESERVING THE TEETH AND GUMS

The antiseptic and preservative properties of carbolic acid are so well known that to comment upon its virtues as a dentifrice would be superfluous. It is sufficient to say that this is an agreeable and perfectly safe preparation, possessing powerful antiseptic properties, and it is strongly recommended for cleansing and preserving the teeth and maintaining the gums in a healthy condition.

Directions for Use.—Sprinkle a few drops upon a wet tooth-brush and well brush the teeth in the usual manner.

These labels are given to exhibit suitable wording, rather than style of printing.

Any names may be applied to the following saponaceous liquid dentifrices :—

I

Cloves	ʒj.
Cassia	ʒij.
Castile soap	ʒij.
Proof spirit	Oj.

Macerate for a week and add

Oil of cloves	ʒss.
Oil of orange	ʒj.
Tincture of benzoin	ʒij.
Tincture of rhatany	ʒj.

Shake well and filter.

II

Curd soap	ʒv.
Oil of cassia	♏vj.
Oil of cloves	♏vj.
Oil of peppermint	♏x.
Oil of anise	♏xij.
Oil of lemon	♏xij.
Oil of wintergreen	♏xx.
Ess. Jockey Club	ʒij.
Solution of carmine	ʒss.
Rectified spirit	ʒv.
Water	ʒx.

Dissolve all the ingredients except the soap in the spirit. Dissolve the soap in the water. Mix the solutions, make up to 16 oz. with water, and filter after two days.

III

Castile soap	ʒxij.
Carbonate of potassium	ʒiiss.
Powdered rhatany	ʒj.
Glycerine	ʒxxx.
Sugar	ʒxxx.
Oil of wintergreen	ʒvj.
Oil of anise	ʒvj.
Oil of cinnamon	ʒss.
Oil of cloves	ʒss.
Oil of peppermint	ʒss.
Rectified spirit	Cong. j.
Water	a sufficiency

Put the soap in 1 gallon of cold water and add the carbonate of potassium. Dissolve the oils in the S.V.R. Add the sugar, glycerine, and rhatany to 1 gallon of cold water, and to it add the soap solution and the oil mixture. Lastly, add cold water to make 5 gallons. Shake daily for two weeks, then leave undisturbed for two weeks. Decant off the clear solution and filter the rest.

IV

White soap	ʒiss.
Glycerine	ʒiv.
Rectified spirit	ʒvj.
Hot water	ʒvj.
Oil of peppermint	♏xx.
Oil of wintergreen	♏xx.
Oil of cloves	♏x.
Essence of vanilla	ʒss.
Solution of carmine	a sufficiency

Dissolve the soap in the hot water, add the glycerine and essence of vanilla. Dissolve the oils in the S.V.R. Mix the two solutions, add the colour, allow to stand twenty-four hours, and filter through animal charcoal.

V

Thymol	gr. ij.
Carbolic acid	♏v.
Oil of sassafras	♏vj.
Oil of wintergreen	♏vj.
Oil of rose-geranium	♏vj.
Oil of eucalyptus	♏v.
Oil of calamus	♏v.
Oil of pumilio pine	♏xx.
Glycerine	ʒij.
Rectified spirit	ʒivss.
White Castile soap	ʒij.
Tincture of cudbear	a sufficiency
Distilled water to	ʒxvj.

Dissolve the soap in 5 oz. of

warm water. Dissolve the acid, thymol, and oils in the spirit, and add to the soap solution. Filter through paper sprinkled with calcium phosphate. Add the glycerine and mix.

VI. (Resembling Sozodont)

White soap	ʒv.
Glycerine	ʒv.
Water	ʒiiss.

Mix and add the following solution:—

Oil of peppermint	♏xij.
Oil of cinnamon	♏v.
Oil of cloves	♏v.
Oil of anise	♏x.
Spirit	ʒv.

In a few days filter.

VII. (Resembling Kalliodont)

White Castile soap	ʒix.
Glycerine	ʒix.
Syrup	ʒiv.
Water	ʒxxv.
Rectified spirit	ʒxxv.
Tincture of cardamoms (1–20)	ʒss.
Tincture of snake-root	ʒss.
Oil of peppermint	♏XLV.
Oil of wintergreen	♏XLV
Oil of cloves	♏x.
Oil of cassia	♏x.
Solution of carmine	a sufficiency

Mix the first four ingredients, dissolving the soap. Mix the remainder of the ingredients and pour in the aqueous solution. Colour with the carmine, set aside in a cool place for a week, and filter.

There are many other formulas for these saponaceous and quillaia dentifrices, but the foregoing are typical in regard to flavour. Both quillaia and soap solutions are apt to lose their foaming properties if they are weak in the essential constituents. It is, therefore, of advantage to note that the majority of the more popular foaming dentifrices are strong solutions of olive-oil soap, such as No. v. Olive-oil-soap solutions do not gelatinise.

Unsaponaceous Dentifrices

Dentifrice-water

Thymol	ʒj.
Ol. menthæ pip.	ʒj.
Ol. eucalypti	ʒiss.
Ol. limonis	ʒiss.
Chloroformi	ʒv.
Glycerini	ʒj.
Spt. rectificat. ad	ʒxv.

Colour the spirit with a small crystal of magenta dye and dissolve in it the thymol, oils, and chloroform, and add the glycerine last.

This is an excellent dentifrice-water, especially for those who smoke, or who are afflicted with fetid breath. A few drops of it should be used on a soft tooth-brush.

Eau de Botot

(From Analyses of the Original)

I

Fruct. anisi stellati	℥ss.
Caryoph.	℈iv.
Cinnamom.	℈iv.
Ol. menth. pip.	♏xx.
Cocci cacti	℈j.
Spt. rectificat.	℥vij.
Aq. rosæ ad	℥xij.

Macerate for a week and filter.

II

Ol. menthæ pip.	ʒj.
Ol. caryoph.	ɱx.
Ol. cassiæ	ɱvj.
Ol. limonis	ɱvj.
Ol. anisi	ɱxx.
Rad. anchusæ.	ʒv.
Aq. destil.	℥vj.
Spt. rectificat.	ʒxx.

Macerate for a week and filter.

III. Winkler's Formula

Ol. menthæ pip.	ɱv.
Tr. myrrhæ	ʒiv.
Tr. krameriæ	ʒiv.
Tr. cedri lig.	℥viij.

Eau Dentifrice
(The Pierre type)

Star-anise	℥vj.
Cochineal	ʒss.
Rectified spirit	Oiiss.

Make a tincture by maceration and add

Oil of anise	ʒiss.
Oil of peppermint	ʒss.
Heliotropin	gr. v.

Keep in a cool place for several weeks and filter.

Elixir Dentifrice

Ol. cinnamom.	ʒj.
Ol. anisi	ʒij.
Ol. caryoph.	ʒij.
Ol. menth. pip.	ʒj.
Tr. benz. simp.	ʒj.
Tr. guaiaci	ʒj.
Tr. pyrethri	ʒj.
Liq. cocci	ʒiss.
Spt. rectificat.	℥cxxv.

Mix and filter after a few hours.

Elixir de Rose pour les Dents

Ol. menth. pip.	ɱlxxx.
Ol. caryoph.	ɱxv.
Ol. cinnam.	ɱxv.
Ol. anisi	ʒj.
Liq. carmin. ammon.	q.s.
Aq. destil.	ʒij.
Spt. rectificat.	Oj.

Misce et filtra.

Favourite Tooth-wash

Ol. menth. pip.	ʒss.
Ol. cinnamom.	ɱXLV.
Ol. menthæ virid.	ɱxv.
Ol. caryophylli	ɱxv.
Tr. myrrhæ	ʒj.
Tr. persionis (1–8)	ʒiij.
Spt. rectificat. ad	℥xvj.

M.

Formalin Tooth-wash

Formalin	ʒv.
Tincture of benzoin (simp.)	ʒiij.
Tincture of myrrh	ʒvj.
Oil of peppermint	ɱxx.
Oil of star-anise	ɱxv.
Oil of cassia	ɱv.
Oil of cinnamon	ʒj.
Tincture of cochineal	ʒij.
Rectified spirit to	℥xx.

Mix, and after three days filter.

Menthol Dentifrice

Cochineal	ʒj.
Red-cinchona bark	ʒj.
Canella-bark	ʒj.
Cloves	ʒj.
Pellitory-root	ʒj.
Star-anise	℥iij.
Rectified spirit	Cong. j.

Macerate for a week and add

Menthol	℥ss.

Finally filter.

Ruby Cream

Menthol.	℈ij.
Ol. caryoph.	ʒiss.
Ol. menth. pip.	ʒiss.
Acid. boric.	ʒj.
Tr. myrrhæ	℥iv.
Tr. persionis	℥ij.
Spt. rect. ad	℥xxxvj.

M.S.A.

These tooth-washes may be used directly on the brush, but it is better, on the whole, to mix with water, brushing the teeth with the mixture, then rinsing the mouth well with it.

Salol Dentifrice

Salol	ʒj.
Saccharin	gr. ij.
Oil of peppermint	ʒj.
Oil of anise	ɱv.
Oil of fennel	ɱv.
Oil of cloves	ɱij.
Oil of cinnamon	ɱj.
Simple tincture of benzoin	ɱx.
Rectified spirit to	ʒvj.

Dissolve and filter.

This is an attempt to imitate Odol. Another formula in the Dutch Pharmacopœia Supplement calls for salol 5, rectified spirit 190, oil of peppermint 1, oil of cloves 0·04, oil of fennel 0·04, and saccharin 0·004. For a rose-flavoured variety oil of star-anise and oil of rose-geranium with a little otto of rose are essential. We understand that Odol is not made from salol, and that the aromatic constituents are partly combined as salicylates.

Saccharin Dentifrice

Saccharin.	ʒss.
Ol. caryophyll.	ʒj.
Tr. myrrhæ	ʒij.
Tr. benzoini simp.	ʒj.
Tr. quininæ	ʒj.

M.

MOUTH-WASHES

In this section we include all those preparations which are generally used diluted with water as antiseptic or astringent washes for the mouth, especially for removing bad odours or for strengthening spongy gums.

Alkaline Mouth-wash

Sodii bicarbonatis	ʒiss.
Ammonii carbonatis	gr. vj.
Tr. myrrhæ	ʒj.
Aq. coloniensis	ʒiij.
Aq. lavandulæ	ʒj.
Aq. destillat. ad	ʒvj.

M. et filtra.

Antiseptic Lotion

Potassii nitrat.	ʒij.
Boracis	ʒss.
Potassii chlorat.	ʒj.
Tr. arnicæ	ʒj.
Aq. rosæ ad	ʒxxiv.

M.

Both the foregoing are to be used with an equal volume of warm water. The second lotion has a wonderfully beneficial influence upon the gums when tender or swollen.

Astringent Dental Tinctures

I

Tannin	ʒij.
Rose extrait	ʒss.
Tincture of orange-peel	ʒss.
Cochineal colouring	ʒij.
Camphor-water to	ʒxx.

Mix, and filter after an hour.

II

Acid. boric.	ʒss.
Tr. krameriæ	ʒj.
Aq. coloniensis	ʒxx
Tr. myrrhæ	ʒxx.

M.

III

Rad. krameriæ	ʒj.
Cort. cinchon. rub.	ʒj.
Camphoræ	ʒvj.
Tr. myrrhæ	ʒij.
Aq. destillat.	ʒix.
Spt. rectificat.	ʒxxvj.

Macerate the powdered solids in the liquids for seven days, then add

Otto rosæ	mx.
Ol. caryoph.	mvj.

Filter.

IV

Tr. krameriæ	ʒiij.
Tr. myrrhæ	ʒiij.
Spt. camphor.	ʒiij.
Tr. cinch. rub.	ʒiss.
Dentolin. (p. 156) ad	ʒxij.

M.

These preparations are all well adapted for putting up as specialities. They are the prescriptions of experienced dentists, and have stood the test of time. Any of the washes may be used frequently when the mouth is very sore, or morning and evening as a preventive of spongy gums. A dessertspoonful in a claretglassful of warm water is the quantity to use.

Astringent Tincture with Red Gum

Gummi rubri	ʒj.
Tannin.	ʒx.
Tr. pyrethri	ʒx.
Aq. lavand.	ʒj.
Spt. rectificat.	ʒx.
Aq. destil. ad	ʒxx.

Mix, and after two days filter.

This, in addition to being a powerful astringent, is a safe and effectual toothache-cure.

Eucalyptus Mouth-water

Ol. menthæ pip.	ʒss.
Ol. eucalypti	ʒj.
Ol. geranii	mx.
Ol. caryoph.	mv.
Ol. anisi	mv.
Acid. benzoic.	ʒj.
Rad. anchusæ	℈iv.
Spt. rectificat.	ʒv.

Macerate seven days and filter.

Mentholine Mouth-wash

Menthol.	℈ij.
Ol. caryoph.	ʒiss.
Ol. menthæ pip.	ʒiss.
Acid. boric.	ʒj.
Tr. myrrhæ	ʒiv.
Tr. persionis	ʒij.
Spt. rectificat. ad	ʒxxxvj.

Dissolve the solids in a pint of spirit and add to the rest of the ingredients. Filter.

Iodo-tannin Gum Lotion

Tannin.	ʒj.
Tr. iodi	ʒss.
Tr. myrrhæ	ʒj.
Spt. rectificat.	ʒiss.
Aq. rosæ ad	ʒv.

Misce et filtra.

A teaspoonful in a glass of warm water is most useful in preventing loosening of the teeth.

Saccharin Mouth-washes.—When saccharin was introduced in 1886 there was considerable writing in regard to its power as an antiseptic, especially for dental purposes. Saccharin has unquestionably advantages as a dental adjuvant, but it has not found complete favour as a specific. The

following formulas suffice to show the nature of preparations recommended :—

I

Saccharini	ʒss.
Ol. menthæ pip.	gtt. x.
Spt. tenuior.	ʒvj.

M.

II

Saccharini	gr. xv.
Tr. myrrhæ	ʒiss.
Aq. lavandulæ ad	ʒiij.

M.

III

Saccharini	gr. xv.
Aq. coloniensis	ʒiss.
Aquæ rosæ	ʒiss.

M.

IV

Saccharin.	gr. j.
Ol. caryoph.	♏xv.
Tr. myrrh.	ʒss.
Tr. benzoin. simp.	ʒss.
Tr. cinchonæ	ʒss.

M.

V

Acid. salicylic.	ʒj.
Saccharin.	gr. xv.
Sodii bicarb.	gr. xv.
Aq. coloniensis	ʒvj.

M.

Of any of the foregoing from a half to a whole teaspoonful in a glassful of water is to be used for rinsing the mouth.

Salicylol Mouth-wash

Ol. menth. pip.	ʒj.
Ol. gaultheriæ	ʒss.
Acid. salicylic.	ʒss.
Aq. rosæ	ʒv.
Spt. rectificat.	ʒxx.

M.

Tint with magenta.

Salol Mouth-wash

Fruct. anisi stellat.	ʒv.
Caryophylli	ʒv.
Cort. cinnamomi	ʒv.
Cocci cacti	ʒiiss.
Ol. menthæ pip.	ʒiij.
Spt. rectificat.	Oiij.

Macerate for a week and add

Salol	ʒj.

Filter.

Thirty drops to be used with a wineglassful of warm water.

Smokers' Lotion

Aquæ menth. pip.	ʒvj.
Aq. laurocerasi	ʒiv.
Acid. carbol.	♏v.
Sodii biborat.	ʒj.

M.

To be used several times a day.

Smokers' Essence

Ol. menthæ pip.	ʒss.
Ol. myristicæ	ʒss.
Ol. origani	ʒss.
Ol. limonis	♏xL.
Ol. melissæ	♏xL.
Ol. rosmarini	ʒiss.
Ess. vanillæ	ʒvj.
Spt. rosæ	ʒiss.
Extrait aurantii	ʒiss.
Tr. benzoin. simp.	ʒij.
Spt. rectificat.	ʒxiiss.

M.

Salo-thymol Dentifrice and Mouth-wash

Salolis	℈iiss.
Thymolis	℈j.
Ol. lavandulæ	♏L.
Ol. menthæ piperitæ	♏L.
Acidi benzoici	℈v.
Glycerini	ʒvj.
Tr. cardamomi co.	ʒv.
Spt. rectificat. ad	ʒxx.

M.S.A.

Use five drops in a glassful of water to rinse the mouth.

The smokers' essence is an excellent preparation for removing the odour of tobacco from the breath. Salol mouth-wash is equally good for this purpose, but the essence has distinctly superior characteristics.

Tincture of Myrrh and Borax.—An old-fashioned but popular astringent tincture, in which borax exists largely as boric acid. This accounts in part for its well-established antiseptic properties. The tincture is chiefly used for spongy conditions of the gums, and generally where there is tenderness of the mouth, especially in those who wear artificial teeth. A teaspoonful in half a tumbler of warm water is used as a gargle and mouth-wash. Retailers should note that the labels they employ do not, by recommending the tincture for ailments, involve liability to stamp-duty.

I

Boracis	ʒj.
Glycerini	ʒj.
Aq.	ʒv.
Tr. myrrhæ ad	Oij.

M.S.A.

II

Boracis	ʒj.
Glycerini	ʒiv.
Aq. coloniensis	ʒss.
Tr. myrrhæ	ʒx.

M.S.A.

III

Tr. myrrh.	ʒxxxij.
Aq. coloniensis	ʒxxxij.
Lig. santal. rub.	ʒss.
Glycerini	ʒiv.
Boracis	ʒij.
Aq. rosæ	ʒiv.
Mel. depurat.	ʒiv.

Macerate one month and filter.

IV

Myrrh. elect. cont.	ʒj.
Tr. krameriæ	ʒx.
Sodii biborat.	ʒiss.
Glycerini	ʒss.
Aq. coloniensis	ʒx.

Macerate fourteen days and filter.

V

Boracis	ʒss.
Glycerin.	ʒj.
Aq. bullient.	ʒiss.
Aq. coloniensis	ʒiv.
Tr. myrrh. ad	ʒxx.

Rub the borax with the glycerine in a mortar, add the water, and stir until dissolved. When nearly cold add the other ingredients, and shake occasionally during two days, then filter.

VI

Glycerin. boracis	ʒj.
Tr. myrrh.	ʒxv.
Aq. coloniensis	ʒiv.
Tr. krameriæ	ʒss.

M.

VII

Myrrh (in coarse powder)	ʒiv.
Orris-root (in coarse powder)	ʒiv.
Rectified spirit	ʒxlviij.
Eau de Cologne	ʒxij.
Borax	ʒj.
Boiling water	ʒiv.

Macerate the myrrh and orris in the rectified spirit for a week, and strain. Dissolve the borax in the water, add it to the tincture, then the eau de Cologne, and filter.

VIII

Boracis	ʒij.
Glycerini	ʒiv.
Tr. myrrhæ	ʒxxxij.
Spt. rectificat.	Cong. j.
Aq. destillat.	ʒxx.
Aq. coloniensis	ʒxx.
Syrup.	ʒviij.

M.S.A.

IX

Myrrhæ	ʒij.
Boracis	ʒij.
Rad. krameriæ	ʒj.
Aq. bullientis	ʒvj.
Syrupi	ʒij.
Aq. coloniensis ad	Oij.

Dissolve the borax in the water and add to the rest of the ingredients. Macerate for a week and filter.

X

Myrrh	ʒiij.
Rhatany	ʒvj.
Borax	ʒij.
Honey	ʒij.
Glycerine	ʒij.
Water	ʒxvj.
Eau de Cologne	Oiij.

Prepare in a similar way to No. VII.

It is interesting to note that No. VIII. is Mr. Joseph Ince's recipe (modified, as the original contains too much water, which deposits a part of the myrrh). The first two formulas are typical of those used in Scotland, but many pharmacists south of the Tweed prefer the non-astringent tincture.

The Bouquet Tincture

Myrrhæ	ʒvj.
Ol. neroli	ʒiiss.
Ol. lavand.	ʒiiss.
Ol. limonis	ʒivss.
Ol. bergamot.	ʒivss.
Otto rosæ	ɱx.
Spt. rectificat.	Ov.

Macerate seven days, filter, and add

Pulv. boracis	ʒiij.
Glycerini	ʒix.

Then add

Syrupi	ʒix.
Pulv. krameriæ	ʒxiv.
Aq. destil.	ʒxviij.

Again macerate for a fortnight and filter.

This is a superior tr. myrrhæ et boracis.

Preservative Lotion

For the Teeth and Gums

Ess. bergamot.	ɱiij.
Ol. neroli	ɱv.

Solve in

Tr. pyrethri	ʒiiss.
Spt. chloroform.	ʒiss.

Adde

Potass. nitrat.	ʒiij.
Liq. rosæ rub.	ʒij.
Aq. rosæ	ʒxxxij.

M. et cola pro mag. carb.

Dental Tincture of Myrrh

Macidis contus.	gr. L.
Myrrh. opt. cont.	ʒiv.
Rad. krameriæ cont.	ʒiv.
Glycerini	ʒss.
Spt. rectificat.	ʒxij.

Macerate for fourteen days, shaking every day or every second day once during the day, then filter.

Directions.—Half a teaspoonful in a wineglassful of water (tepid in winter) will be found a most effectual astringent wash for the teeth and gums. Should be used every night and in the morning.

Tincture of Myrrh and Rhatany

(For the Teeth and Gums)

Tr. krameriæ . . .	ʒxij.
Tr. myrrhæ . . .	ʒvj.
Aq. coloniensis . .	ʒj.
Spt. chloroformi . .	ʒij.

M.

Thymol Mouth-wash

Thymol	ʒj.
Peruvian balsam . .	ɱxx.
Oil of peppermint . .	ʒss.
Oil of cloves . . .	ɱij.
Oil of sage . . .	ɱiv.
Rectified spirit to . .	ʒx.

Mix and filter.

Antiseptic Mouth-wash

Boro-glycerini . .	ʒj.
Tr. krameriæ . . .	ʒj.
Aq. coloniensis . .	ʒj.
Spt. chloroformi . .	ʒj.
Spt. rectificat. ad . .	ʒviij.

DENTAL REQUISITES

It would be beyond the scope of this volume to treat the art of dentistry with completeness. All that is attempted is to give a collection of formulas which are in frequent demand.

Amalgams

Ordinary silver coins filed down and mixed with an equal weight of mercury make a good amalgam for filling teeth. More commonly precipitated copper (from the sulphate by scraps of iron) is washed, dried, damped with mercurous-nitrate solution, and combined with mercury under hot water.

Arsenical Paste

I

White arsenic, in impalpable powder . .	ʒj.
Cocaine	ʒiv.
Lanoline . . .	ʒv.

Mix.

II

White arsenic, in impalpable powder . .	ʒj.
Antipyrin . . .	ʒij.
Lanoline . . .	ʒiij.

Mix.

III

Acid. arseniosi . .	ʒj.
Morphin. acetatis . .	gr. x.
Ol. caryophylli . .	ɱxx.
Creosoti .	q.s. ut fiat pasta

IV

(McIntosh's)

Acid. arseniosi . .	ʒij.
Cocainæ hydrochlor. .	ʒij.
Menthol. . . .	ʒss.
Glycerin. .	q.s. ut fiat pasta

Impression-wax

The best impressions are yielded by pure beeswax freed from grit by melting and straining through flannel. It may be tinted with alkanet. Sometimes a mixture of paraffin and Japan wax (7 : 1) is used. It is softened for use in very hot water.

The following formula yields a product which quickly sets very hard :—

Stearin	ʒviij.
Gum dammar. . .	ʒxij.
French chalk . . .	ʒxxij.
Carmine . .	to colour

Melt the stearin and shake into it the gum dammar, previously powdered, then add the chalk tinted with the carmine and ol. geranii ʒss.

Dentists' Plaster

is plaster of Paris of finest quality mixed with water to which a little salt has been added to accelerate setting. The mass—which should be a very thick cream—is made as required.

Excavation Anæsthetic

Veratrinæ . . .	gr. j.
Acidi carbolici . .	℥j.
Ol. caryophylli . .	℥j.

M.

To mop out the cavity.

Dental Cement for Stopping

Zinci oxidi . . .	gr. xcviij.
Magnes. calc. . .	gr. ij.

M.

When required for use the powder is to be made into a stiff paste with acid. phosphoric. syr.

Guttapercha Stopping

Dissolve pure guttapercha in five times its weight of chloroform, allow to deposit, pour the clear solution upon zinc oxide (double the quantity of guttapercha taken), make into a paste, and spread into sheets, which cut.

Zinc-oxychloride Tooth-stopping

Oxide of zinc . . .	℥xxv.
Silica	℥j.
Borax	℥ss.
Glass	℥v.

All in fine powder, and the zinc oxide freshly calcined. Mix, sift, and keep in a stoppered bottle. When required for use make into a soft paste with a saturated solution of zinc chloride.

DENTAL LOCAL ANÆSTHETICS

Cocaine Solutions

I

Cocainæ hydrochloridi .	gr. ixss.
Sodii chloridi . .	gr. viij.
Liq. adrenalini . .	♏xxviij.
Aq. destil. steril. . .	℥ij.

M.

II (Lucas)

Cocaine hydrochloride .	1 part
Boric acid . . .	1 part
Glycerine . . .	2 parts
Wintergreen oil . .	1 part
Dill water . . .	95 parts

Dissolve and filter bright.

Eucaine Solutions

I (Bennett and Gamble)

Eucaine hydrochloride.	0·2 gram
Sodium chloride . .	0·82 gram
Distilled water . to	100 c.c.

II

Eucaine lactate . .	gr. ix.
Synthetic suprarenin solution . . .	♏xl.
Chloretone . . .	gr. ivss.
Sodium chloride . .	gr. viij.
Aq. destillat. . .	℥ij.

This can be sterilised by boiling.

Novocaine Solutions

I

Novocaine . . .	1·5 part
Sodium chloride . .	0·92 part
Thymol . . .	0·02 part
Distilled water to	100 parts

II (Bennett and Gamble)

Novocaine .	0·25, 0·5, 2 grams
Sodium chloride	0·87, 0·82, 0·5 gram
Distilled water to	100, 100, 100 c.c.

Cocaine is being replaced in tooth-extraction by these other anæsthetics. It is important that the solutions should be isotonic through the presence of sodium chloride, so that no osmosis is produced in the tissues, otherwise necrosis and sloughing may occur. The solutions must also be sterile, and the injecting syringe and instruments sterilised. It is customary to inject 10 to 15 minims of a 1-per-cent. solution into each side of the tooth five minutes before extraction. (See the *C. & D. Diary*, 1910, p. 457.)

Calorific Fluids are for applying to the tooth and surrounding gum a few seconds before extraction. Ethyl chloride is most used, also the following :—

I

Chloroform.	ʒj.
Spt. rectificat.	ʒij.
Ol. citronellæ	ɱvj.
Ol. bergamottæ	ʒss.

M.

II

Æther. pur.	ʒvj.
Menthol.	ʒss.
Ext. cannab. ind.	℈iv.
Ol. menth. pip.	ʒj.

M.

III

Camphor.	gr. x.
Ol. citronellæ	ɱiv.
Æther.	ʒj.
Chloroform. ad	ʒj.

M.S.A.

IV (Parsons')

Chloroformi	ʒiss.
Tr. aconiti	ʒiss.
Tr. capsici	ʒss.
Tr. pyrethri	ʒij.
Ol. caryoph.	ʒij.
Camphor.	ʒij.

The tinctures for Parsons' fluid are made with rectified spirit.

TOOTHACHE-REMEDIES

Ninety per cent. of the cases of toothache can be divided into two groups, primary and secondary. Primary toothache is congestion of the tooth pulp ; the unyielding walls of the pulp cavity permitting no expansion, there is intense pressure on the nerve tissue, and consequent pain, which finally terminates by strangulation of the pulp. This is true toothache, arising in the tooth, but it may be felt in the terminals of any of the branches of the fifth nerve on the corresponding side of the face, and is rarely felt in the tooth where it originates, unless there is suppuration in the pulp, in which case the peridental membrane will be affected. It is obvious, therefore, that many cases of so-called neuralgia in the face are simply toothache. Careful excavation, sufficient to allow an escape of blood from the pulp, at once relieves the pain, but generally in such cases toothache tinctures, &c., are applied. The surgical treatment consists of the use of an arsenical dressing to devitalise the pulp, removal of the latter from the root canals, and filling to the apex.

The secondary form of toothache is usually admitted by the sufferer to be toothache, because the pain appears to be intensified by occlusion with an opposite tooth and by pressure of any kind. In reality the pain is caused by gangrene of the pulp, and most dentists order immediate extraction. So far as the public are concerned there is little distinction between the kinds of toothache—everybody accepts Burns's definition of it, and asks a remedy or palliative, of which we subjoin numerous examples.

The 1903–4 revolution in the incidence of medicine stamp-duty gave us an opportunity of analysing the remedies commonly sold by chemists as 'toothache-essence' or 'tooth-ache-tincture,' which titles now create liability to duty, subject to exemption in certain cases. We then found that quite 30 per cent. of the preparations owe their efficacy to camphor, the other ingredients being chloroform and essential oils. Camphor is used in a much larger proportion than this, although it is not a remarkably certain or quick soother of the pain. Carbolic acid is a better local anæsthetic, and is largely employed, but it has the disadvantage of blanching the mucous membrane, which ultimately peels off. At least 20 per cent. of the preparations in use owe their efficacy to carbolic acid, which has largely replaced creosote in this regard. The liquefied mixture of chloral hydrate and camphor is used to a limited extent, sometimes dissolved in spirit or oil, when it is on the whole more efficacious. Menthol is becoming a more popular remedy, and combinations of various aromatics and anodynes with tannin or a resin constitute about 20 per cent. of essences and tinctures. Cocaine and morphine occasionally occur; these are undoubtedly most efficacious in stopping pain instantaneously, but chemists should not forget that toothache-cures containing cocaine are responsible for creating coca-maniacs, and that not altogether seldom.

Several scores of preparations of all these classes were printed in the supplementary volume of this work published in 1904, and from it we select the following typical examples, retaining the numbers then used.

Toothache Essences

P.F., II., 5

Camphoræ	ʒj.
Chloroformi puri	ʒiss.
Rad. anchusæ.	q.s.

M.S.A.

P.F., II., 8

Camphoræ	ʒiss.
Ras. santal. rub.	gr. xx.
Ol. caryophylli	ʒvj.
Spt. vini rect. ad	ʒvj.

Misce.

P.F., II., 15

Tr. myrrh. c. borac.	ʒij.
Ol. caryophylli	ʒij.
Tr. opii	ʒss.
Camphoræ	ʒss.
Tr. pyrethri ad	ʒiv.

Misce.

P.F., II., 25

Ol. caryophylli	ʒj.
Tr. benzoini co.	ʒj.
Spt. camphoræ	ʒj.

Misce.

P.F., II., 31

Mentholis	ʒj.
Chloroformi	ʒj.

Misce.

P.F., II., 36

Lin. aconiti	ʒj.
Chloroformi	ʒj.
Mentholis	ʒss.
Spt. camphoræ	ʒij.

Misce.

P.F., II., 43

Mentholis	ʒij.
Camphoræ	ʒij.
Chloral. hydratis	ʒij.

Misce.

P.F., II., 45

Camphoræ,
Chloral. hydratis . aa. partes æq.

Misce.

P.F., II., 47

Mentholis	ʒiij.
Phenolis	ʒiij.
Chloralis hydratis	ʒiij.
Chloroformi	ʒiij.
Camphoræ	ʒiij.
Ol. amygdalæ.	ʒiij.

Misce.

P.F., II., 52

Mastic.	ʒss.
Chloroformi	ʒiss.
Spt. vini rect.	ʒj.
Acidi carbolici cryst.	ʒiv.
Ol. cassiæ	mx.
Ol. caryophylli	ʒij.
Tr. pyrethri ad	ʒviij.

Misce.

P.F., II., 79

Pulv. mastic.	ʒij.
Tannini.	ʒj.
Morphinæ acetatis	gr. vj.
Ol. caryophylli	ʒij.
Chloroformi	ʒiv.
Spt. vini rect.	ʒij.

Misce.

P.F., II., 101

Acidi tannici	ʒss.
Acidi benzoici	ʒj.
Camphoræ	ʒss.
Mastici	ʒij.
Sandaracæ	ʒij.
Cocainæ hydrochlorid.	ʒss.
Chloroformi	ʒij.
Acidi carbolici	ʒss.
S.V.R.	ʒvij.
Pulv. opii	ʒss.

M.S.A.

Toothache-tinctures

P.F., II., 2

Camphoræ	ʒij.
Chloroformi	ʒiij.
Ætheris meth.	ʒvj.

Misce.

Colour with 10 gr. aniline magenta.

P.F., II., 29

Tr. guaiaci	ʒiv.
Tr. myrrhæ	ʒiv.
Spt. camphoræ	ʒiv.
Ol. caryophylli	ʒij.
Ol. cajuputi	ʒij.
Liq. ammoniæ	ʒj.

Misce.

P.F., II., 33

Acidi carbolic. liq.	ʒvj.
Ol. caryophylli	ʒvj.
Chlorof. camphorat.	ʒivss.

Misce.

P.F., II., 40

Ol. terebinth.	ʒij.
Chlorof.	ʒj.
Ol. cajuputi	ʒss.
Camphoræ	gr. xxv.
Tr. pyrethri	ʒss.
Acidi carbol. pur.	ʒj.

Misce.

P.F., II., 46

Sandarac.	ʒss.
Camphoræ	ʒss.
Chloroformi	ʒj.
Acidi carbolic. xtal.	ʒss.
Spt. vini rect.	ʒij.

Misce.

P.F., II., 51

Creosoti	ʒij.
Liq. ammon. fort.	ʒij.
Tr. camphoræ	ʒiv.
Tr. opii	ʒviij.

Misce.

P.F., II., 58

Menthol.	ʒj.
Cocainæ	gr. xv.
Mastic.	ʒiss.
Camphoræ	ʒj.
Bals. peru.	ʒj.
Chloroformum ad	ʒiij.

Misce.

P.F., II., 65

Rad. pyrethri	ʒj.
Rad. aconiti	ʒiv.
Cocci cacti	ʒij.
Sandarac.	ʒiv.
Spt. rectificat.	ʒviij.

Macerate eight days and filter; add

Menthol.	ʒij.
Ol. caryophylli	ʒvj.
Chlorof. meth.	ʒxij.
Spt. rectificat. ad	ʒx.

Misce.

P.F., II., 81

Acidi tannic.	ʒss.
Ætheris sulph.	ʒiij.
Tr. camphoræ fort.	ʒss.
Tr. pyrethri	ʒij.
Tr. myrrhæ	ʒij.
Ol. caryophylli	ʒj.
Ol. eucalypti	ʒj.

Misce.

P.F., II., 90

Acidi carbolici	ʒj.
Ol. caryophylli	ʒj.
Ol. cassiæ	ʒj.
Ol. menthæ pip.	ʒj.

Misce.

P.F., II., 95

Tr. pyrethri	ʒxx.
Lin. camphoræ co.	ʒxl.
Tr. myrrhæ	ʒxij.
Ol. caryophylli	ʒviij.

M.S.A.

The formulas for toothache-remedies which we now proceed to give are also typical, and have mostly been given in previous editions. (*See also* the Supplementary Chapter.)

I

Eucalyptus oil	ʒj.
Mastic	ʒij.
Camphor	℈ss.
Morphine (alkaloid)	℈ss.
Chloroform	ʒij.
Absolute alcohol to	ʒv.

Macerate, and when dissolved strain. If required coloured add a little tr. benzoin. co.

II

Camphor.	ʒij.
Mastic.	ʒj.
Bals. peruvian.	ʒj.
Chloroformi	ʒxiv.

Dissolve and filter.

Without the camphor this is *Sedative Dental Mastic.*

III

Tannin.	ʒiv.
Camphor.	ʒviij.
Collodii	Oij.
Acid. carbolic. cryst.	ʒj.
Æther. sulph.	ʒiij.

M.S.A.

This is best made by leaving the pyroxylin of the collodion to the last, dissolving the tannin, camphor, and phenol in the ether and spirit, straining, then adding the pyroxylin.

IV

Acid. carbol. (1 in 20 aq.)	ʒj.
Chloral. hydratis	ʒj.
Tr. aconiti	ʒj.
Camphor.	ʒj.
Menthol.	ʒij.
Alcohol. absolut.	ʒj.

M.

The first three form temporary stoppings, and are to be applied on cotton-wool, the hollow of the tooth being previously dried by packing with absorbent cotton.

V

Mastic	ʒiv.
Tannin	ʒij.
Camphor	ʒiv.
Tincture of myrrh	ʒiv.
Chloroform	ʒiv.
Tincture of opium	ʒiv.
Rectified spirit	ʒiij.

Macerate for a week and filter.

This makes a very good toothache anodyne, as well as a temporary stopping, and it has the advantage of being comparatively innocuous. Send it out in ʒij. bottles, with some absorbent cotton, to retail at *6d.*

Directions.—Dry the hollow tooth by stuffing the hole with the cotton-wool. Remove the cotton, and immediately place in the hole a fresh piece of the cotton-wool saturated with the tincture.

VI

Menthol.	ʒj.
Spt. rectificat. ad	ʒj.

S.

This is particularly useful for sensitive dentine. Also applied with a brush from the temple down the cheek to the spot where the affected tooth is, the pain is relieved in a few minutes.

VII

Finest mastic	ʒvj.
Extract of Indian hemp	ʒj.
Chloroform	ʒij.

Mix, and shake occasionally until dissolved; then add

Morphine	℈j.
Menthol.	ʒj.
Chloral hydrate	ʒij.
Camphor	ʒiv.
Oil of cajuput.	ʒij.
Tincture of pellitory to	ʒiv.

Mix, and shake occasionally

until dissolved ; then add the mastic solution and filter.

This is both an anodyne and a protective. It is very efficient, and becomes popular. It is to be put up in ʒij. phials, cased, and to retail at 1s. If labelled as follows a stamp will be required :—

INSTANTANEOUS TOOTHACHE-CURE

A few drops to be applied on cotton-wool.

VIII

Acid. carbol.	gr. x.
Glycerini	ʒj.

Solve et adde

Ess. caryoph.	ʒj.
Tr. aconiti	ʒss.
Tr. opii	ʒss.

M.

IX

Camphor.	ʒj.
Chloroform.	ʒss.
Ol. caryoph.	ɱxv.
Ol. cajuput.	ɱxv.
Spt. rectificat.	ʒj.

M.

X

Tannin.	℈ij.
Creosoti.	gtt. xv.
Æther. ad	ʒj.

S.

XI

Creosoti.	ʒj.
Ol. caryoph.	ʒj.
Ol. menth. pip.	ʒss.
Chloroform. ad	ʒiv.

M.

XII

Gallæ	ʒiv.
Rad. pyrethri	ʒiij.
Opii	ʒss.
Ol. caryoph.	ʒij.
Ol. cajuput.	ʒij.
Glycerini	ʒij.
Aquæ	ʒiij.
Spt. rectificat.	ʒxv.

Macerate the powdered solids in the glycerine, water, and 5 oz. of spirit for three days, then add the rest of the spirit and oils, and after a week filter.

XIII

Ol. caryoph.	ʒss.
Acid. carbolic. liq.	ʒiij.
Liq. cocci	ʒss.
Glycerinum ad	ʒvj.

M.

XIV

Ac. carbol.	ʒij.
Camphoræ	ʒiij.
Menthol.	ʒss.
Chloroformum ad	ʒj.

S.

XV

Thymol.	gr. xv.
Menthol.	gr. xv.
Cocainæ	gr. j.
Chloroform. ad	ʒj.

M.

XVI

Camphor.	ʒj.
Ac. tannic.	ʒj.
Sang. draconis	ʒj.
Mastic.	ʒiss.
Ol. caryophyll.	ʒj.
Chloroformi	ʒij.
Spt. rectificat.	ʒij.

Macerate several days and filter.

XVII

Cocainæ hydrochloridi	℈iv.
Ol. menthæ piperitæ	ɱlxxx.
Acidi carbolici	ʒx.
Collodium ad	ʒx.

Mix the first three ingredients with the spirit for the collodion, and when dissolved add to the solution of pyroxylin in ether.

These formulas afford sufficient variety to choose from. The general directions are to apply a few drops on cotton-wool to the hollow of the tooth.

Dental Colloid

(syn. *Toothache Jelly*)

Crystallised carbolic acid should be used for these. Melt it on a water-bath and add to the other ingredients of the preparations while in a liquid state.

I

Acid. carbol. . . . ʒj.
Collodii . . . . ʒj.

Half fill a ʒij. phial with the collodion, then pour in the acid and shake.

II

Morph. acet. . . . gr. j.
Ol. menth. pip. . . ♏iv.
Acid. carbol. . . . ♏xx.

Misce et adde

Collodium ad . . . ʒj.

This is called *Neuro-dental Colloid*, a name which may also be applied to any in this class.

III

Ac. carbol. . . . gr. xv.
Menthol. . . . gr. x.
Collodium ad . . . ʒj.

M.

'Take a little on a match stalk, and apply to the cavity dried out with cotton-wool, placing a plug of wool on top.'

Camphor-chloral

Camphor.,
Chloral. hydrat. . aa. pt. æq.

Rub together to form a solution.

Camphor-phenol

Acid. carbol.,
Camphor. . . aa. pt. æq.

Rub together.

Mentholated Camphor-chloral

Camphor.,
Chloral. hydrat.,
Menthol. . aa. pt. æq.

Rub together.

These have already been quoted from P.F., II., under other names.

Coniine Toothache-drops

Coniine (pure) . . gtt. j.
Oil of cloves . . . gtt. iv.
Oil of cinnamon . . gtt. iv.
S.V.R. . . . . ʒij.

Directions.—Put one drop on a pledget of absorbent cotton, and apply to the hollow tooth.

This acts like a charm in some instances.

Cocaine Drops

Cocain. hydrochlor. . gr. v.
Aq. chloroformi . . ʒj.

M.

To be applied to the cavity with a camel-hair pencil.

Toothache Ball and Stopping

Resin. flav. . . . ʒj. ʒvj.
Gum. juniper. . . ʒj. ʒvj.
Spt. rectificat. . . ʒj.
Spt. ætheris . . . ʒvj.
Acid. carbol. . . . ʒj.

M. et solve.

Toothache-gum

Pulv. tragacanthæ . . gr. xl.
Acidi carbol. liq. . . ♏l.
Glycerini . . . ʒj.
Ol. menth. pip. . . ♏xxx
Aquæ . . . . ♏x.

Misce.

Toothache-pills

I

Cocainæ hydrochlor.	gr. xvj.
Pulv. opii	gr. lxiv.
Menthol.	gr. xvj.
Pulv. althææ	gr. xlviij.
Muc. acaciæ	♏viij.

Ft. massa. Divide into ½-gr. pills, one of which is to be put into the hollow of the tooth and covered with cotton-wool.

II

Pulv. opii	℈iv.
Pulv. rad. belladon.	℈iv.
Pulv. pyrethri	℈iv.
Ol. caryophyll.	gtt. xv.
Ol. cajuput.	gtt. xv.
Ol. amygdal.	ʒss.
Ceræ flav.	ʒij.

With the wax melted in the almond oil by heat incorporate the other ingredients, and divide into 500 pills.

Toothache-powders

The following recipes are typical of many articles now sold for relieving toothache:—

I

Acetanilidi	gr. v.
Caffeinæ	gr. j.
Pulv. sacch. alb.	gr. ij.
Carmini	q.s.

Just enough carmine is to be added to give a faint pink colour.

A powder may be taken every four hours.

II

Quininæ sulph.	gr. ij.
Ammonii chlorid.	gr. x.

M.

Every four hours.

Old-fashioned, but good.

The majority of neuralgic and headache powders consist solely of acetanilide or phenacetin, 5 to 8 gr.

Toothache-sticks

Ceræ flav.	ʒss.
Acid. carbol.	ʒiij.
Ol. caryoph.	ʒss.

Melt the wax and add to it the acid and oil. While still liquid immerse thin layers of absorbent cotton in the fluid, and when sufficiently cool roll them into the shape of rods. For use snip off a little piece, warm it gently, and introduce into the hollow tooth.

Toothache-snuff

Sodii bicarb.	ʒij.
Pulv. amyli	ʒj.
Pulv. verat. alb.	ʒj.
Cocain. hydrochlor.	gr. x.

M.

Two-drachm boxes of this are sold for a penny.

Toothache-wax

Powdered chloral hydrate	℈iv.
Powdered opium	ʒiss.
Powdered mastic	ʒiiss.
Venice turpentine	ʒvj.
Beeswax	ʒij.

The last three substances are melted together, then the chloral and opium are introduced, and the mixture stirred until it becomes plastic. It is then rolled out into rods or formed into pellets.

Toothache-wool

Ceræ albæ	ʒij.
Acidi carbol. xtal.	ʒj.
Chloral. hydratis	ʒij.

Melt the wax by heat, add the other ingredients, stir till dissolved; then immerse cotton-wool in the liquid, squeeze out the surplus, and card when cold.

A piece of this is to be inserted dry in the hollow of the aching tooth, and renewed as often as may be desired.

PERFUMES

Summary.—Manufacture of Extraits from Floral Pomades—Concrete Perfumes—Formulas for Essences, Spirits, and Tinctures used in Compounding — Handkerchief Bouquets and Essences—Perfumed Waters—Honey-water—Hungary Water—Lavender-water—Eau de Cologne — Florida Water — Violet-water—Sachets and Solid Perfumes — Sachet-powders — Pot-pourri—Fumigating-perfumes—Perfuming Halls, Theatres, and Programmes—Synthetic Perfumes.

THE manufacture of perfumes is one of the oldest arts known to mankind, and one which retains all its ancient mystery. Science has not simplified perfumery much, nor Chemistry relieved it of empiricism, although synthetic perfumes are having considerable influence in this direction. We know by tradition and by practice how to soften and enrich distinctive odours, but whether the results are due to mere neutralisation of one odour, or a part of it, by a different one, or to the formation of new molecular compounds, is beyond our ken. Mr. W. F. Charles truly remarks that—

'The building up of a flower scent requires great ingenuity, skill, and perseverance, and many years of patient labour may be expended over a single flower perfume with only very imperfect results. The perfumer when desirous of producing a flower perfume must be able to detect from the scent of the living flower each of the constituent principles which in the aggregate compose the volatile oil of that flower, and also be able to judge accurately by the sense of smell the intensity and therefore the proportion of each constituent, much in the same way as a skilled musician will be able to recognise the notes in a chord of music.'

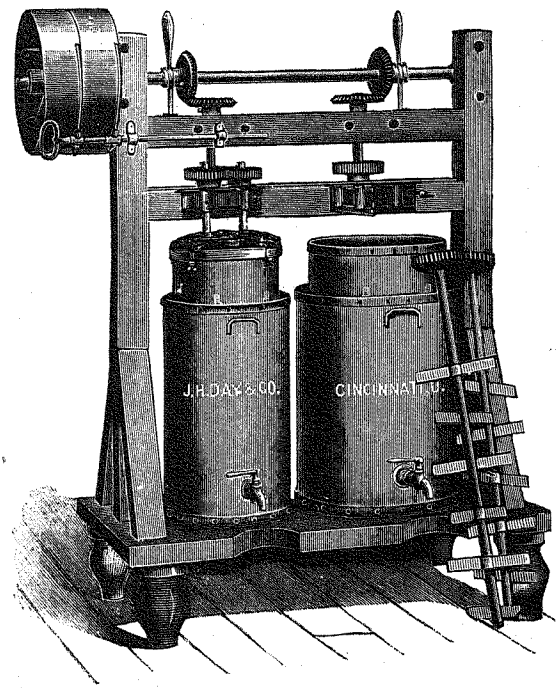
Solutions of essential oils do not possess the same fragrance as solutions made from floral pomades—rose is a familiar proof of the difference. In the process of distilling the otto some principle of the rose, or part of its odour, remains in the distillate water, whereas fats and fixed oils extract the whole of the more delicate perfumes from flowers. This

cannot be done by water-distillation, and upon this is based an important branch of the perfume industry.

In the South of France, the fat used in making floral pomades is a mixture of lard and suet, both of which are refined and purified during the winter months, and kept stored away in well-closed tins until required for use the summer following. When the flower-harvest comes round 1 cwt. of the fat is melted in a steam-jacketed pan, and poured into a tinned-copper vat, capable of holding from 5 to 6 cwt.; about 1 cwt. of flowers being added, these are well stirred in with a wooden spatula. After standing for a few hours the contents are poured into pans, heated to 60° C., and then strained through a tin sieve. Fat retained by the flowers is squeezed out by hydraulic pressure, freed from water by subsidence, and the whole of the fat again receives a second or third complement of flowers, being treated as before. This is the process of maceration. It is supplemented by *enfleurage*, or cold extraction, in the case of jasmine, tuberose, and cassie. The apparatus used in this process consists of frames the bottoms of which are sheet glass. A number of these frames, all of the same size, when placed one on the top of the other form a tolerably tight box. To make the pomade the fat mixture is spread on each side of the glass, and the blossoms are lightly strewn upon the upper surface. Then the frames are fitted together one on the top of the other. They are set aside, and next day the flowers are removed, and fresh blossoms put in their place, this being repeated until the fat is sufficiently impregnated. From time to time the surface of the absorbent is scratched with a comb-like instrument, so that the lower portions of fat may receive some of the perfume. The oils used in extracting perfumes from flowers are the finest olive oil and a heavy and odourless petroleum. Both have certain advantages in the preparation of perfumes, but their use is chiefly confined to experts.

The pomades are used for making essences which in this treatise are designated 'Extraits' (to distinguish them from essences made by solution of oils or the like in spirit). Con-

crete perfumes are also made from them (*see* p. 179). The most convenient strength for extraits is 16 oz. of the pomade to 16 fl. oz. of spirit—*i.e.*, a mixture of 9 fluid parts of 60 over-proof rectified spirit (triple distilled) with 1 fluid part of distilled water. On the large scale extraits are made without heat in such an



Floral-pomade Washer.

apparatus as is shown here. The fat and spirit are stirred together in the cylinders by two churning rods (shown leaning against the side) for from four to six hours. The fat is treated in this way three times. On the small scale it is customary to melt the pomade by a gentle heat and pour it little by

little into the spirit, shaking vigorously so as to have it thoroughly divided. Shake several times daily for a week.

Amongst extraits which are thus made are cassie, orange, reseda (mignonette), rose, tuberose, violet, jasmine, and jonquil. Working as a retail chemist would do, the following is the process which gives the best results. Cassie Extrait we take as an example, but other extraits are made in the same way :—

Cassie pomade	1 lb.
Spirit	16 oz.

Place the pomade in a wide-mouthed stoppered-bottle of about 50 oz. capacity ; close the bottle and occasionally put it into hot water until the pomade melts ; then add the spirit, a few ounces at a time, shaking well until the whole has been added. Set aside for a month, shaking daily ; then filter the extrait, and should it not come up to 16 fl. oz., take as much spirit as will make up that bulk, mix with the pomade, and in a day or two filter and add to the first.

It is customary to give three washings ; the liquid from the second washing being used for cheap perfumes and for diluting, while the liquid from the third is also used to make the first washing of the next batch. The fat must be separated as far as possible from the first and second washings by chilling with ice and filtering.

Concrete Perfumes are essentially floral pomades *minus* the fat, made by exhausting the flowers with petroleum ether. To make extraits from them, proceed as follows :—

Rub 1 dr. of concrete perfume with 10 to 15 minims of rectified spirit in a mortar until quite smooth ; slowly add more spirit, and transfer the solution to a 24-oz. bottle ; wash out the mortar with spirit until 20 oz. has been used. Shake occasionally for a day, and filter. Preserve the filter-paper and shake it with 20 oz. of spirit to make a second washing, and repeat this if necessary, or use the paper in making sachet-powder.

Permanence of perfume is not altogether due to the amount of oil actually present, something being attributable to 'fixing.' Thus when extraits of floral pomades are the basis, we have in the perfume a slight trace of fatty matter which does not evaporate, therefore retains the more volatile essential oils longer on the handkerchief than they otherwise would be.

The same is true of resinous ingredients, such as benzoin and sumbul. Ambergris, civet, and musk have this property to some extent also—that is to say, while they are perfumes in themselves, they evaporate very slowly and retain floral odours. The reason for the use of ambergris, civet, and, to a less extent, musk lies behind that property, however, there being little doubt that they, like other animal odours peculiar to sexes, have a certain attractive influence, and give pleasure in the smelling, all the more pleasant because it is unexplainable. Some synthetic perfumes and compounded perfume-bases of a secret nature are also good 'fixers,' because they are slowly volatile. It is well to consider these facts when compounding perfumes; for while a good and expensive perfume may be compounded from volatile oils, such perfume lacks lasting power.

ESSENCES, SPIRITS, AND TINCTURES

The following are formulas for essences and tinctures which are frequently required in compounding perfumes :—

Essence of Ambergris

Ambergris	gr. lxxx.
Powdered orris	ʒij.
Spirit	Oj.

Macerate for at least fourteen days and filter.

Compound Tincture of Ambergris

Ambergris	ʒj.
Musk	ʒss.
Oil of cinnamon	ɱxviij.
Oil of rhodium	ɱxij.
Carbonate of potassium	ʒiss.
Spirit	ʒviij.
Spirit of rose	ʒiv.

Macerate for fourteen days in a moderately warm place and filter.

Spirit of Almonds

Essential oil of almonds	ɱlxxx.
Spirit	Oj.

Dissolve.

Tincture of Benzoin

Siam benzoin	ʒij.
Spirit to	Oj.

Macerate for at least fourteen days and filter.

Essence of Civet

Civet	ʒj.
Powdered orris	ʒss.
Carbonate of ammonium	gr. x.
Spirit	ʒxv.
Water	ʒj.

Rub up the civet in a mortar with the orris. Dissolve the carbonate in the water, add to the spirit, and mix with the mortar contents. Bottle, set aside for a month, and filter.

Spirit of Cloves

Oil of cloves	ʒij.
Spirit to	Oj.

Dissolve.

Spirit of Geranium

Oil of rose-geranium	ʒj.
Spirit to	Oj.

Dissolve.

Ionone Spirit

(For Violet Perfumes)

Ionone (10-per-cent. sol.)	ʒj.
Rectified spirit	Oj.

Mix.

Essence of Musk

I

Grain musk	ʒij.
Hot water	ʒj.
Spirit	ʒxv.

Rub the musk to a paste with the water; cover, and when cold add the spirit. Macerate for a fortnight and filter, washing the marc with an ounce of spirit.

II

Finest grain musk	gr. XL.
Carbonate of potassium	gr. v.
Boiling water	ʒj.
Rectified spirit	ʒix.

Mix the first three in a mortar, stir occasionally until cold, pour into a bottle, and add the spirit. Macerate ten days, or until required, and filter.

III

Grain musk	ʒj.
Solution of ammonia	ɱx.
Water	ʒj.
Spirit to	Oj.

Macerate for a fortnight, and filter.

Ammonia has a wonderful influence in developing the odour of musk, and restores it when lost.

Synthetic Musk Solution

Synthetic musk	ʒj.
Rectified spirit	ʒxix.

Dissolve.

Spirit of Neroli

Oil of neroli	ʒss.
Spirit to	Oj.

Dissolve.

Orris Solution

Concrete otto of orris	ʒj.
Rectified spirit	ʒxix.

Mix the otto (melted by the heat of the hand) and the spirit, agitating briskly, and after a day filter.

Tincture of Orris

Orris-root in powder No. 40	ʒv.
Spirit	a sufficiency

Macerate the orris in 10 oz. of spirit for two days, then pack in a percolator, and allow all the liquid to percolate through, adding more spirit until 20 oz. has been used. Finally, displace as much as possible of the spirituous tincture with water.

Spirit of Rose

Otto of rose	ʒij.
Oil of rose-geranium	ʒj.
Spirit to	Oj.

Mix and shake, set aside for a few days, and filter.

Spirit of Santal

Same strength as spirit of cloves.

Tincture of Storax

Strained storax	ʒj.
Spirit to	Oj.

Mix well, set aside for a week, and filter.

Tincture of Tonka Bean

Made from Tonka beans in the same manner and of the same strength as tincture of orris.

Essence of Vanilla

I

Fine vanilla (cut small) . ℥j.
Spirit . . . . ℥xvj.

Macerate for a month and filter.

This is best for perfumes if kept long enough.

II

Fine vanilla (cut small) . ℥j.
Grain musk . . . gr. j.
Carbonate of potassium . gr. x.
Boiling water . . ℥iv.

Put the solids in a flask and pour the boiling water in. Cork and agitate slightly. Set aside until cool and add

Spirit . . . . ℥xij.

Macerate two weeks and filter.

Some essence of vanilla formulas prescribe sugar: this is a mistake, because the essence so made becomes thick.

Vanillin Solution

Vanillin . . . . ℥j.
Rectified spirit . . ℥xxix.

Dissolve.

Spirit of Vetivert

Same strength as spirit of cloves.

Spirit of Ylang-ylang

Same strength as spirit of cloves.

Essence of Mirbane

Oil of mirbane . . ℥j.
Spirit . . . . ℥ix.

Mix.

Compound Essence of Tonka Bean

Bruised orris-root . . ℥ij.
Tonka bean (cut small) . ℥vj.
Essence of ambergris . ♏xxx.
Oil of ylang-ylang . . ♏xxx.
Compound essence of orris ℥iv.
Oil of lemon . . . ℥ss.
Otto of rose . . . ℥ss.
Oil of bergamot . . ♏lxxx.
Spirit . . . . ℥xvj.

Macerate fourteen days and filter

Compound Essence of Orris

Vanilla (cut very small) . ℥ij.
Orris-root, bruised . . ℥vj.
Essence of Peru balsam . ℥j.
Spirit . . . . ℥xv.

Macerate fourteen days and filter.

Essence of Peach-blossom

Orange-flower extrait . ℥v.
Jasmine-flower extrait . ℥x.
Spirit of almonds . . ℥iiiss.
Essence of Peru balsam . ℥ij.
Oil of lemon . . . ℥ij.
Spirit . . . . ℥iiss.

Mix.

Essence of Peru Balsam

Peruvian balsam . . ℥j.
Spirit . . . . ℥ix.

Shake well occasionally for a day, allow to settle, and filter.

Essence of Verbena

Oil of lemongrass . . ℥iij.
Oil of lemon . . . ℥ss.
Spirit to . . . Oj.

Mix, add 2 dr. of French chalk, and filter.

HANDKERCHIEF BOUQUETS AND ESSENCES

In the first edition of this volume an apology was made for the large number of formulas for perfumes given here, especially as there are fashions in perfumes. Many of these formulas are survivals of bygone fashions, but there is scarcely a perfume of the past which is absolutely extinct.

Even those of the Stuart time survive in some form, modernised, perhaps, by the elimination of non-essential ingredients, and made more lasting by methods already referred to. The introduction of synthetic perfumes, as the result of more intimate knowledge of the constitution of odorous bodies, has enlarged the range of possibilities in perfume-production; but the best perfumes still owe their favour and stability to the floral pomades which imprison Nature's odours, and experts rely upon these and certain adjuvants little known to outsiders. The art of compounding perfumes cannot be taught through a book; it is largely a gift possessed by few, and these few, with a stock of materials, can produce from the most unpromising formulas, by skilful modification, charming and apparently original odours. The basis in such cases is the most important element: given a good extrait, like jasmine or cassie, and a dash of an animal perfume, we get, by adding essential oils or synthetic products, both permanency and character. Then a general knowledge of affinity of odours and their incompatibility is essential, and it can be acquired by experience in exercising the sense of smell. The training of a dispensing chemist is particularly useful in perfume-compounding. Chemistry discloses, for instance, that most of the odorous principles are aldehydes, and in certain conditions these are easily decomposed or altered. Ketones and aromatic phenol-alcohols are more stable; thus ammonia perfumed with ketone-ionone retains the perfume well, but if aldehydic perfumes are used for the purpose the odour gradually weakens through the action of the alkali on the aldehyde. It seems probable that in the combinations of essential oils or other perfume-materials in alcohol, whereby the distinctive characters of most of the odours form a blend *sui generis*, there may be some chemical change, and, on the contrary, knowledge of the chemical constitution in certain instances suffices to exclude perfumes from a combination in which they would be decomposed. Reference to the pages on synthetic perfumes will be of some assistance in this regard. It may be noted that when first compounded perfumes have not the

softness which they ultimately develop if kept in bulk for from one to three months before bottling. Grain spirit, specially rectified, should be used in compounding perfumes. In the United States Deodorised Alcohol is used. It is made thus :

Rectified spirit	Cong. j.
Powdered unslaked lime	ʒiv.
Powdered alum	ʒij.
Spirit of nitrous ether	ʒj.

Mix the lime and alum, and add them to the spirit, shaking the mixture well together; then add the spirit of nitrous ether, and set aside for seven days, shaking occasionally; finally filter.

Alexandra Bouquet

Oil of bergamot	ʒiiiss.
Oil of rose-geranium	ʒss.
Otto of rose	ʒss.
Oil of cassia	♏xv.
Spirit	Oj.

Mix.

Bouquet d'Amour

Oil of lavender	ʒij.
Oil of cloves	ʒj.
Oil of bergamot	ʒj.
Otto of rose	♏ij.
Essence of ambergris	ʒv.
Essence of vanilla	ʒv.
Spirit to	Oj.

Mix, and after standing a month filter.

Apple-Bloom Bouquet

Oil of ylang-ylang	ʒj.
Oil of lignaloe	ʒviij.

Mix, and label 'Oil of apple-bloom.'

To make the bouquet take

Concrete violet, washing No. 3	ʒlxxx.
Oil of apple-bloom	ʒij.
Spirit of cloves	ʒij.
Synthetic musk solution	ʒj.
Water	ʒxl.

Extrait d'Ambre

Rose extrait	ʒx.
Essence of ambergris	Oj.
Essence of musk	ʒv.
Essence of vanilla	ʒij.
Rose-water	ʒvij.

Mix.

Astoria Bouquet

Oil of myrtle (Warrick's).	ʒiiss.
Oil of bitter orange	ʒiiss.
Jasmine extrait	ʒv.
Mitcham oil of lavender	ʒss.
Oil of bergamot	ʒiiss.
French geranium oil	ʒj.
Oil of marjoram	♏xv.
Oil of bay	♏x.
Grain musk	gr. xlv.
Rectified spirit	Ovss.

Macerate for a month and filter.

Bridal Bouquet

Oil of sandalwood	ʒss.
Rose extrait	ʒiv.
Jasmine extrait	ʒiv.
Orange-flower extrait	ʒxvj.
Essence of vanilla	ʒj.
Essence of musk	ʒij.
Tincture of storax	ʒij.

Mix.

Ess. Bouquet

For a note on the origin of this perfume *see* 'Perfumed Waters.'

I

Otto of rose	♏iv.
Oil of neroli	♏ij.
Essence of musk	♏xl.
Jasmine extrait	ʒvss.
Tincture of orris	ʒviij.
Spirit to	Oiv.

Mix.

II

Oil of neroli (pétale)	♏xv.
Oil of lemon	ʒj.
Oil of bergamot	ʒss.
Cassie extrait	ʒj.
Essence of ambergris	ʒj.
Tincture of orris	ʒj.
Spirit of rose	ʒviij.
Spirit	ʒv.

Mix.

III

Oil of bergamot	ʒij.
Oil of lemon	ʒj.
Tincture of ambergris	ʒj.
Tincture of orris	ʒij.
Spirit of rose	ʒiv.

Mix and filter with French chalk.

IV

Ol. lavand. ang.	ʒss.
Ol. neroli super.	♏v.
Ol. rosæ virgin.	ʒss.
Ol. bergamot.	♏xxiv.
Ess. moschi	ʒiiss.
Ess. ambergris	ʒv.
Spt. rectificati	ʒviij.

M.

Princess Beatrice Bouquet

Spirit of rose	Oj.
Violet extrait	ʒxxx.
Jasmine extrait	ʒxxv.
Tuberose extrait	ʒxvj.
Tincture of orris	ʒv.
Essence of vanilla	ʒiij.
Cassie extrait	Oj.
Rose extrait	Oij.
Orange extrait	ʒvj.
Essence of musk	ʒiv.
Essence of ambergris	ʒij.
Oil of French geranium	♏l.
Oil of patchouli	♏x.

Mix.

Sweet Briar

Oil of neroli	ʒj.
Oil of lemongrass	ʒss.
Oil of lemon	ʒj.
Oil of bergamot	ʒij.
Essence of musk	ʒss.
Cassie extrait	ʒij.
Orange extrait	ʒiv.
Spirit of rose to	Oj.

Mix.

Brighton Nosegay

A refreshing perfume for the handkerchief, resembling, but excelling, Mona Bouquet.

Ess. moschi	ʒiv.
Ol. bergamot.	ʒiss.
Extrait jasmin.	ʒij.
Ol. lavand. ang.	ʒss.
Ol. neroli	ʒss.
Ol. patchouli	♏v.
Ol. pimentæ	♏v.
Ol. rosæ	ʒiss.
Ol. verbenæ	♏viij.
Ol. cassiæ	♏v.
Spt. rect. ad	Oij.

Macerate one month, then filter three times.

Chypre

Oil of rosemary	♏c.
Oil of bitter orange	ʒss.
Oil of petitgrain	ʒij.
Oil of bergamot	ʒiiss.
Oil of limetta	ʒss.
Oil of neroli	♏xlv.
Spirit	Oiv.

Mix, and after four days add 10 oz. of distilled water. Allow to remain at rest for a fortnight and filter.

Buckingham Bouquet

Oil of lavender	♏x.
Oil of neroli	♏x.
Otto of rose	♏xx.
Cassie extrait	ʒviij.
Jasmine extrait	ʒviij.
Orange-flower extrait	ʒviij.
Rose extrait	ʒviij.
Essence of ambergris	ʒiv.
Tincture of orris	ʒiv.

Mix.

Carnation Pink

Oil of cloves	♏v.
Cassie extrait	℥iv.
Jasmine extrait	℥ij.
Orange-flower extrait	℥iv.
Rose extrait	℥viij.
Essence of civet	℥ij.
Essence of vanilla	℥ij.
Tincture of storax	℥j.
Spirit of ylang-ylang	℥iv.

Mix.

Caroline Bouquet

Oil of lemon	♏xv.
Oil of bergamot	℥j.
Rose extrait	℥iv.
Tuberose extrait	℥iv.
Violet extrait	℥iv.
Tincture of orris	℥ij.
Essence of ambergris	℥j.

Mix, and filter after ten days.

Cedar of Lebanon Bouquet

Oil of cedar-wood	℥j.
Spirit of rose	℥vj.
Spirit	℥xxv.

Mix.

Cherry Blossom

I

Essence of white heliotrope	℥vj.
Essence of vanilla	℥j.

Mix.

II

Essence of peach-blossom	℥xij.
Violet extrait	℥ij.
Essence of mirbane	℥ij.

Mix.

Essence of Clove Pink

I

Rose extrait	℥xiv.
Orange-flower extrait	℥vij.
Essence of vanillin	℥iiiss.
Oil of cloves	♏xx.

Mix, and after standing for several days filter.

II

Oil of cloves	♏xiij.
Cassie extrait	℥v.
Orange extrait	℥v.
Rose extrait	℥x.
Spirit of rose	℥vij.
Essence of vanillin	℥iij.
Essence of musk	℥ss.

Mix.

May be tinted pink with a drop or two of eosin solution.

Court Nosegay

Rose extrait	Oj.
Violet extrait	Oj.
Jasmine extrait	Oj.
Spirit of rose	Oj.
Essence of musk	℥j.
Essence of ambergris	℥j.
Oil of lemon	℥ss.
Oil of bergamot	℥ss.
Oil of neroli	℥j.

Mix.

Essence of Eglantine

The original recipe of the late Mr. White, Cornhill, London, for a perfume which was formerly highly esteemed in the City.

Oil of lemon	℥iss.
Oil of lavender	℥vij.
Oil of bergamot	℥x.
Oil of neroli	℥iij.
Oil of cedrat	℥iv.
Oil of cloves	℥iv.
Oil of sandalwood	℥j.
Oil of cinnamon	℥ss.
Oil of caraway	℥ss.
Oil of nutmeg	℥ss.
Essential oil of almonds	♏xvj.
Millefleurs	℥xiij.
Jasmine extrait	℥xiij.
Essence of ambergris	℥ij.
Essence of musk	℥ij.
Spirit	Cong. j.

Mix, allow to stand for a month, and filter.

Night-blooming Cereus

(*Cereus nycticallus*, N.O. Cactaceæ)

Essence of civet	ʒij.
Tincture of Tonka bean	ʒij.
Tincture of benzoin	ʒiv.
Spirit of rose	ʒiv.
Jasmine extrait	ʒiv.

Mix.

Eugenia Bouquet

Tuberose extrait	ʒviij.
Essence of civet	ʒss.
Essence of musk	ʒj.
Essence of vanilla	ʒj.
Tincture of benzoin	ʒss.

Mix.

Empress of India Bouquet

Grain musk	ʒss.
Ambergris	ʒss.
Civet	gr. xv.
Otto of rose	ɱxlv.
Oil of rhodium	ɱxv.
Oil of bergamot	ʒivss.
Oil of lavender	ʒvj.
Essence of Tonka bean	ʒiij.
Essence of patchouli	ʒiij.
Jasmine extrait	ʒvj.
Triple rose-water	ʒiij.
Spirit	ʒxlviij.

Macerate a month and filter.

Esterhazy Bouquet

This favourite Hungarian bouquet has as great a reputation in Austria as Eau de Cologne has in Germany or England.

Oil of cloves	ɱxv.
Oil of sandalwood	ɱxv.
Essence of ambergris	ʒiss.
Tincture of orris	ʒvj.
Essence of vanilla	ʒvj.
Tincture of Tonka	ʒvj.
Spirit of vetivert	ʒvj.
Spirit of neroli	ʒvj.
Orange extrait	ʒvj.
Spirit of rose	ʒvj.

Mix.

Excelsior Bouquet

Extrait violette de Parme	ʒiv.
Ol. bergamot.	ʒij.
Moschi	gr. xx.
Ol. santal. flav.	ɱl.
Ol. lavand. ang.	ʒij.
Ol. rosæ virgin.	ɱlxxx.
Aquæ flor. aurant.	ʒiij.
Spt. rectificat. ad	ʒxxx.

Mix, and macerate one month, then filter.

Extrait de Caprice de Valerie

Italian verbena oil	ɱx.
Oil of rose-geranium	ɱx.
Oil of bergamot	ʒss.
Essence of musk	ʒss.
Tincture of civet	ʒss.
Tincture of storax	ʒss.
Essence of vanilla	ʒss.
Extrait jasmine	ʒx.
Extrait tuberose	ʒviiss.
Extrait rose	ʒiiss.
Tincture of orris-root	ʒiiss.
Rectified spirit	ʒij.
Rose-water	ʒj.

Mix.

Floral Bouquet

Jasmine extrait	ʒiij.
Millefleurs	ʒvj.
Spirit	ʒvj.

Mix.

Floral Extract

Grain musk	gr. xij.
Oil of bergamot	ʒss.
Otto of rose	ʒss.
Oil of cassia	ʒss.
Oil of cinnamon	ʒj.
Oil of neroli	ɱxx.
Jasmine extrait	ʒiv.
Spirit	Oivss.

Mix, and after a month filter.

Folkestone Bouquet

Musk	ʒss.
Oil of neroli	ʒss.
Oil of lavender	ʒss.
Oil of cloves	ʒss.
Oil of sandalwood	ʒss.
Otto of rose	ʒj.
Oil of bergamot	℥ss.
Millefleurs	ʒiv.
Jasmine extrait	℥iv.
Tincture of Tonka bean	ʒiv.
Tincture of orris	℥iv.
Triple rose-water	ʒx.
Triple orange-flower water	℥x.
Spirit	Oiv.

Macerate a month and filter.

Frangipanni

I

Oil of bergamot	ʒiiiss.
Essence of vanilla	ʒiiiss.
Tincture of tolu	ʒij.
Essence of musk	ʒiss.
Rose extrait	℥j.
Cassie extrait	ʒj.
Jasmine extrait	℥viij.
Spirit	Oj.

Mix.

II

Oil of neroli	♏xv.
Oil of sandalwood	♏xxx.
Otto of rose	♏x.
Essence of musk	ʒiij.
Essence of ambergris	ʒvj.
Spirit of vetivert	℥iij.
Violet extrait	℥ij.
Spirit	Oj.

Mix.

III

(A Superior Bouquet)

Oil of sandalwood	ʒj.
Oil of neroli	ʒj.
Oil of rose-geranium	ʒj.
Otto of rose	ʒij.
Essence of civet	℥ss.
Spirit of vetivert	℥j.
Tincture of orris	℥iij.
Orange-flower extrait	℥iij.
Tuberose extrait	℥iij.
Essence of musk	℥v.

Mix.

Lusitania

Grain musk	gr. iij.
Coumarin	gr. vj.
Vanillin	gr. xv.
Storax	ʒx.
Essential oil of almonds	♏viij.
Oil of orris-root	♏xv.
Otto of rose	ʒss.
Oil of neroli	ʒss.
Oil of rose-geranium	ʒiss.
Tuberose extrait	℥xv.
Jasmine extrait	℥xv.
Spirit	Ovj.

Macerate for a month and filter.

Heather Bloom

Ess. bouquet	℥x.
Wood violet	℥x.
Jasmine extrait	℥v.

Mix.

Heliotrope

I

Essential oil of almonds	♏x.
Essence of civet	℥ss.
Spirit	℥ij.
Essence of ambergris	℥ij.
Orange-flower extrait	℥ij.
Rose extrait	℥iv.
Essence of vanilla	℥viij.

II

Heliotropin	gr. xv.
Otto of rose	♏iv.
Oil of bitter almonds	♏ij.
Essence of musk	ʒij.
Ess. bouquet	℥iij.
Jasmine extrait	℥viss.

III

Heliotropin	ʒiv.
Compound essence of orris	Oiss.
Rose extrait	℥viij.
Jasmine extrait	℥viij.
Oil of neroli (pétale)	♏L.
Oil of bergamot	ʒij.
Essence of musk	℥iv.
Otto of rose	℥ij.
Compound essence of Tonka bean	℥viij.
Spirit	Oiv.

Allow to stand for fourteen days, then filter three times through English grey filtering-paper.

IV

Grain musk	gr. x.
Vanilla	ʒviij.
Orris-root	ʒviij.
Spirit	Ovij. ʒv.

Percolate with the spirit, and in the percolated tincture dissolve the following:—

Benzoic acid	ʒiss.
Peruvian balsam	ʒiss.
Oil of neroli	ʒiss.
Otto of rose	ʒiss.
Essential oil of almonds	ʒiss.
Oil of ylang-ylang	ɱx.
Conc. orange-flower water	ʒxv.

Mix well and set aside for a month, then filter.

V

Concrete orange, washing No. 3	ʒxxv.
Heliotropol (or heliotropin ʒj.)	ʒj.
Oil of ylang-ylang	℥j.
Oil of neroli	gr. vj.
Essence of rose	ʒj.
Ionone (10 per cent. sol.)	ɱxij.

Mix, and label 'Oil of heliotrope.'

To make inexpensive heliotrope bouquet, mix

Oil of heliotrope	ʒxij.
Concrete rose, washing No. 3	ʒx.
Rose-water	ʒxv.

After twenty-four hours filter through fullers' earth.

White Heliotrope

A

Heliotropin	ʒij.
White-rose extrait	ʒj.
Jasmine extrait	ʒj.
Essence of musk	ʒss.
Rectified spirit to	Oiv.

Mix.

B

Spirit of neroli	ʒiv.
Oil of bergamot	ʒj.
Essential oil of almonds	ɱiv.

Mix.

Allow A and B to stand separately for a week, then mix them and filter.

Hilly Fields Bouquet

This is a rather pronounced perfume, but it should take well with people who want 'something strong.' Any other name can be given to it.

Tonka beans	ʒj.
Vanilla	ʒiv.
Orris-root	ʒiij.
Grain musk	gr. iv.
Oil of bergamot	ʒij.
Oil of rose-geranium	ʒij.
Oil of patchouli	ʒss.
Oil of nutmeg	ʒiv.
Oil of lavender	ʒiij.
Oil of cloves	ʒiv.
Oil of peppermint	ʒj.
Oil of cassia	ʒij.
Tincture of sumbul	ʒiij.
Honey-water	ʒv.
Spirit	Oiij.

Bruise the solids and macerate in the mixed liquids for a month, then filter.

Holy Basil

Otto of rose	ɱxlv.
Oil of bergamot	ʒj.
Oil of citron	ʒij.
Essence of musk	ʒiv.
Tincture of storax	ʒxvj.
Orange extrait	Oj.
Cassie extrait	Oj.
Jasmine extrait	Oj.
Tuberose extrait	Oj.
Spirit	Oj.
Rose extrait	ʒxxv.
Tincture of Tonka	Oij.
Spirit of geranium	Oij.
Essence of vanilla	Oiiss.

Mix.

Honeysuckle

I

Oil of pimento	ʒx.
Essential oil of almonds	ʒx.
Oil of cedrat	ʒv.
Oil of origanum	ʒiij.
Otto of rose	ʒj.
Spirit	Oiv.

Mix.

II

Oil of neroli	♏xij.
Otto of rose	♏x.
Essential oil of almonds	♏viij.
Essence of musk	ʒj.
Tincture of storax	ʒiv.
Essence of vanilla	ʒvj.
Cassie extrait	Oj.
Rose extrait	Oj.
Tuberose extrait	Oj.
Violet extrait	Oj.

Mix.

Hovenia

Oil of neroli	♏x.
Otto of rose	♏xl.
Oil of rose-geranium	ʒss.
Oil of cloves	ʒss.
Oil of lemon	ʒss.
Essence of musk	ʒj.
Rose-water	ʒx.
Spirit	Oij.

Mix.

Hyacinth

Hyacinthin	ʒj.
Oil of neroli (Bigarade)	♏x.
Essence of musk	♏l.
Tincture of benzoin	♏c.
Jasmine extrait	ʒx.
Orange-flower water (triple)	ʒv.
Spirit to	ʒx.

Mix.

Isle of Wight Bouquet

Oil of bergamot	ʒiss.
Oil of lavender	ʒiss.
Oil of lemon	ʒij.
Oil of neroli	♏xl.
Otto of rose	ʒij.
Eau de Portugal	ʒvj.
Ess. millefleurs	ʒiv.
Essence of musk	ʒiv.
Marischale	ʒiv.
Spirit	Oiiss.

Mix.

Fleur d'Italie

Essence of ambergris	ʒj.
Essence of musk	ʒiij.
Spirit of rose	ʒxvj.
Cassie extrait	ʒx.
Tuberose extrait	ʒx.
Jasmine extrait	ʒx.
Violet extrait	Oj.
Rose extrait	Oij.

Mix.

Esprit de Jasmine

Jasmine extrait	Oj.
Essence of ambergris	ʒss.
Oil of neroli	♏viij.
Spirit	ʒx.

Mix.

Jasmine and Musk Rose

Otto of rose	ʒvj.
Essence of musk No. 1	ʒx.
Jasmine extrait	Oij.
Rectified spirit	Oiss.

Set aside for a month and filter.

Jockey Club

I

Jasmine extrait	ʒiv.
Rose extrait	ʒj.
Essence of musk	ʒj.
Tincture of Tonka bean	ʒij.
Rectified spirit	ʒix.

Mix.

II

Extrait of rose	Oij.
Extrait of cassie	Oj.
Extrait of tuberose	Oiss.
Tincture of orris	Oij.
Essence of musk	ʒij.
Essence of civet	ʒiv.
Spirit of rose	Oiv.
Oil of bergamot	ʒj.
Benzoic acid	ʒij.
Rectified spirit	Ov.

Dissolve the oil and acid in the spirit, and add the rest of the ingredients.

III

Concrete cassie, washing No. 1 .	4 lbs.	
Concrete jasmine, washing No. 1 .	10 lbs.	10 oz.
Concrete tuberose, washing No. 1 .	9 lbs.	9 oz.
Essence of ambergris . . .	9 lbs.	9 oz.
Essence of civet .	9 lbs.	7 oz.
Essence of musk Baur . .	12 oz.	
Tincture of orris .	60 oz.	
Essence of Peru balsam . .	3 oz.	
Tincture of storax	6 oz.	
Essence of rose .	10 lbs.	
Vanillin solution .	1½ lb.	
Oil of bergamot .	11 oz.	
Oil of cloves .	½ oz.	
Oil of lavender .	1 oz.	
Oil of neroli .	11/16 oz.	
Oil of sandalwood	1⅛ oz.	
Essence of heliotropol (1 in 16)	4½ oz.	
Concrete orange, washing No. 3 .	20 lbs.	
Rose-water . .	2 lbs.	

Keep this mixture for some days, shaking occasionally. Label 'Oil of Jockey Club.'

To make inexpensive bouquet, mix

Oil of Jockey Club . .	2¼ lbs.
Concrete cassie, washing No. 3	3¾ lbs.
Rose or ordinary water .	2 lbs.

Jonquille

Heliotropin . . .	gr. xv.
Coumarin . . .	gr. viij.
Oil of neroli . . .	℥ij.
Oil of French geranium .	℥iiss.
Ess. oil of almonds . .	♏v.
Jasmine extrait . .	℥x.
Spirit	℥xxx.

Mix.

Kew Gardens Bouquet

Essence of civet . .	℥j.
Essence of musk . .	℥iij.
Spirit of geranium . .	℥x.
Spirit of neroli . .	Oj.
Cassie extrait . . .	℥x.
Jasmine extrait . . .	℥x.
Rose extrait . . .	℥x.
Tuberose extrait . .	℥x.
Violet extrait . . .	℥x.

Mix.

Lilac

Synthetic oil of hyacinth .	℥j.
Synthetic oil of ylang-ylang	♏xcv.
Heliotropin . . .	℥iiss.
Jasmine oil . . .	℥j.
Rectified spirit . .	℥xxxij

Extract the jasmine oil by macerating in a pint of the spirit for two days, shaking occasionally; decant and repeat with the rest of the spirit. In the mixed spirits dissolve the other ingredients, add a teaspoonful or so of fullers' earth, set aside for a week, and filter.

White Lilac

I. The Old Form

Essential oil of almonds .	♏v.
Essence of civet . .	℥vj.
Orange-flower extrait .	℥vij.
Rose extrait . . .	℥x.
Tuberose extrait . .	Oj.

Mix.

A few drops of liquor violæ converts this into "Lilac,' but the rose extrait should be omitted.

II. The New Form

Terpineol . . .	℥j.
Hyacinthin . . .	gr. xv.
Spirit	℥iiss.

Dissolve and add

Oil of ylang-ylang . .	mij.
Essence of ambergris .	mxl.
Essence of musk . .	mxl.
Jasmine extrait . .	ʒvij.
Jonquil extrait . .	ʒvij.
Orange-flower extrait .	ʒvij.
Rose extrait . . .	ʒvij.
Tuberose extrait . .	ʒvij.

Mix.

Lyceum Bouquet

(May also be called by the name of any favourite actor or actress.)

Oil of lavender . .	ʒj.
Otto of rose . . .	ʒj.
Oil of bergamot . .	ʒij.
Oil of ylang-ylang . .	ʒij.
Essence of musk . .	ʒj.
Cassie extrait . . .	ʒvj.
Violet extrait . . .	ʒvj.
Jonquil extrait . .	ʒviij.
Reseda extrait . .	ʒviij.
Tuberose extrait . .	ʒviij.

Mix.

White Pond Lily

Essential oil of almonds .	mij.
Essence of vanilla . .	ʒj.
Spirit of rose . . .	ʒj.
Jasmine extrait . .	ʒj.
Orange-flower extrait .	ʒj.
Rose extrait . . .	ʒij.
Cassie extrait . . .	ʒij.
Tuberose extrait . .	ʒviij.

Mix.

This is simply a variation of Lily of the Valley, and often, in fact, goes by that name.

Lily of the Valley

Maiglöckchen or Muguet

I

Jasmine extrait . .	ʒxl.
Spirit of ylang-ylang .	ʒvj.
Cardamom-seeds (bruised)	ʒij.
Oil of orris . . .	mxx.

Macerate for a month and filter.

If the odour of the cardamoms is found to predominate, add jasmine extrait to neutralise it.

II

Essential oil of almonds .	mx.
Essence of vanilla . .	ʒij.
Rose extrait . . .	ʒij.
Orange-flower extrait .	ʒij.
Jasmine extrait . .	ʒiiss.
Spirit of rose . . .	ʒiiss.
Tuberose extrait . .	ʒxxj.

Mix.

Maids of Honour Bouquet

Oil of cloves . . .	ʒiss.
Oil of nutmeg. . .	ʒiss.
Oil of sandalwood . .	ʒij.
Oil of lavender . .	ʒss.
Otto of rose . . .	ʒj.
Oil of ylang-ylang . .	ʒss.
Tincture of Tonka bean .	ʒj.
Essence of musk . .	ʒiss.
Oil of bergamot . .	ʒiss.
Millefleurs . . .	ʒij.
Spirit of verbena . .	ʒiij.
Spirit	Oivss.

Mix.

Maréchale Bouquet

Oil of cloves . . .	mx.
Oil of sandalwood . .	mx.
Essence of musk . .	ʒj.
Essence of ambergris .	ʒj.
Spirit of neroli . .	ʒij.
Tincture of Tonka bean .	ʒij.
Essence of vanilla . .	ʒij.
Tincture of orris . .	ʒij.
Spirit of vetivert . .	ʒij.
Spirit of rose . . .	ʒiv.
Orange-flower extrait .	ʒiv.

Mix.

May Flowers

Rose extrait . . .	ʒx.
Jasmine extrait . .	ʒx.
Orange-flower extrait .	ʒx.
Cassie extrait . . .	ʒx.
Essence of vanilla . . .	ʒxx.
Essential oil of almonds .	ʒss.

Mix and filter through animal charcoal; or make it with vanillin essence (*see* p. 241).

Magnolia Blossom

Oil of lemon	♏v.
Essential oil of almonds	♏x.
Orange-flower extrait	℥iiiss.
Rose extrait	℥vij.
Spikenard extrait	℥xiv.
Violet extrait	℥xiv.

Mix, set aside for several days, and filter.

Mary Stuart Bouquet

A favourite American perfume. Might be popular in Scotland as 'Mary Queen of Scots' Perfume.'

I

Ol. bergamot.	℥ij.
Ext. rosæ	℥xvj.
Ext. jasmin.	℥vj.
Ess. moschi (℥j. to ℥xvj.).	℥iv.
Ess. ambergris (℥j. to ℥xvj.).	℥ij.
Ess. vanillæ (℥vj. to ℥xvj.)	℥iv.
Tr. iridis flor. (1 in 2)	℥viij.
Spt. rectificat.	℥lxiv.

M.

II

Otto of rose	℥ss.
Oil of sandalwood	℥ss.
Oil of bergamot	℥j.
Oil of neroli	℥ij.
Tincture of benzoin	℥iv.
Tincture of orris	℥iv.
Tincture of Tonka bean	℥iv.
Essence of civet	℥iv.
Spirit of rose	℥iv.
Cassie extrait	℥iv.
Jasmine extrait	℥iv.
Rose extrait	℥iv.
Violet extrait	℥iv.
Essence of musk	℥j.
Essence of ambergris	℥ij.

Mix.

Mignonette, or Reseda

I

Jasmine extrait	℥ij.
Cassie extrait	℥iv.
Rose extrait	℥iv.
Essence of musk	℥iv.
Violet extrait	℥xvj.

Mix.

II

Essence of musk	℥iv.
Tincture of storax	℥vj.
Orange-flower water	℥x.
Rose-water	℥x.
Violet extrait	Oj.
Jasmine extrait	Oij.
Rose extrait	Oij.
Orange-flower extrait	Oiiss.
Cassie extrait	Oivss.
Tincture of orris	Ovj.

Mix.

III

Musk	gr. viij.
Ambergris	gr. xv.
Strained storax	gr. xv.
Tonka beans	℥ss.
Nettle-leaves	℥ss.
Orris-root	℥iss.
Essential oil of almonds	♏ij.
Oil of neroli	♏x.
Otto of rose	♏x.
Oil of bergamot	♏xx.
Spirit	℥x.

Macerate for a fortnight and filter, washing the marc with spirit to make 10 oz.

Midland Counties Bouquet

Jasmine extrait	℥iv.
Otto of rose	℥iss.
Oil of bergamot	℥iv.
Essence of vanilla	℥ij.
Essence of musk	℥ij.
Violet extrait	℥ij.
Rectified spirit	℥xvj.

Mix all except the spirit, and after standing fourteen days add the spirit and filter.

Naval Bouquet

Spirit of santal	℥x.
Essence of patchouli	℥x.
Rose extrait	℥x.
Spirit of vetivert	℥x.
Spirit of verbena	℥xiiss.

Mix.

Sometimes goes by the names 'Neptune Bouquet' and

'Navy Nosegay,' the latter with the addition of citronella oil ♏j. to the ounce.

May Bells

Jasmine extrait	ʒxx.
Orange extrait	ʒx.
Linaloe extrait	ʒj.
Spirit of ylang-ylang	ʒj.
Oil of mace	♏xl.
Tincture of orris	ʒj.

Mix and filter.

Bouquet de Millefleurs

Oil of bergamot	ʒiss.
Oil of sassafras	♏xij.
Oil of cloves	♏xij.
Otto of rose	♏iv.
Lavender-water	ʒj.
Cassie extrait	ʒij.
Jasmine extrait	ʒj.
Orange-flower water	ʒvj.
Spirit	Oj.

Mix. After a week add ʒij. of burnt alum, shake well, and filter.

Millefleurs and Lavender

Oil of lavender	ʒj.
Essence of ambergris	ʒj.
Millefleurs (No. 1) to	Oj.

Mona Bouquet

I

Oil of sandalwood	♏xx.
Otto of rose	♏l.
Oil of rose-geranium	♏xl.
Tincture of benzoin	ʒj.
Essence of musk	ʒj.
Essence of civet	ʒij.
Verbena extrait	ʒss.
Jasmine extrait	ʒj.
Spirit	ʒiv.

II

Benzoic acid	gr. vj.
Oil of neroli	♏xx.
Oil of cloves	ʒiss.
Otto of rose	ʒij.
Oil of bergamot	ʒij.
Oil of sandalwood	ʒss.
Essence of musk	ʒiij.
Tincture of orris	ʒiv.
Orange-flower water	ʒv.
Spirit to	Oij.

Millefleurs

I

Oil of neroli	ʒss.
Oil of cloves	ʒj.
Rose extrait	ʒvj.
Jasmine extrait	ʒvij.
Essence of vanilla	ʒij.
Essence of musk	ʒvj.
Essence of ambergris	ʒj.
Lavender-water	ʒij.
Orange-flower water	ʒij.
Spirit	ʒxviij.

Mix.

II

Essential oil of almonds	♏iij.
Oil of cloves	♏iij.
Oil of neroli	♏iij.
Oil of bergamot	ʒij.
Essence of ambergris	ʒss.
Essence of musk	ʒss.
Tincture of Tonka bean	ʒss.
Rose extrait	ʒj.
Tincture of orris	ʒij.
Cassie extrait	ʒij.
Orange-flower extrait	ʒij.
Spirit of rose	ʒiij.
Jasmine extrait	ʒiv.

Mix.

Musk Bouquet

I

Otto of rose	♏xv.
Tincture of tolu	ʒj.
Essence of musk	ʒxij.
Jasmine extrait to	Oiv.

Mix.

II

Essence of civet	ʒj.
Spirit of rose	ʒiv.
Essence of musk	ʒxj.

Mix.

These essences are for retail as musk perfume, and are preferred for the handkerchief to the plain essence.

Narcissus

Tincture of storax	ʒj.
Tincture of tolu	ʒj.
Jonquil extrait	ʒxv.
Tuberose extrait	Oj.

Mix.

Bouquet de Neroli

Oil of Tangerine orange	ʒj.
Oil of neroli	♏XL.
Essence of ambergris	ʒj.
Tincture of orris	ʒv.
Spirit of rose	ʒv

Mix.

New-mown Hay

I

Oil of bergamot	♏XL.
Oil of rose-geranium	♏XL.
Tincture of benzoin	ʒj.
Essence of musk	ʒj.
Spirit of rose	ʒj.
Spirit	ʒj.
Tincture of Tonka bean	ʒiv.

Mix.

II

Vanillin	gr. j.
Coumarin	gr. ij.
Tincture of orris	ʒij.
Spirit of rose	ʒij.

Mix.

III

Oil of neroli	♏x.
Oil of rose-geranium	ʒj.
Rose extrait	ʒij.
Spirit of rose	ʒij.
Jasmine extrait	ʒij.
Spirit	ʒiv.
Tincture of Tonka bean	ʒvj.

Mix.

There are many varieties of this perfume, perhaps the easiest made possible. Extemporaneously, it is sometimes prepared by mixing equal parts of Jockey Club, tincture of Tonka bean, and spirit.

Opoponax

This perfume, popularised by Piesse, is said to owe its peculiar odour to the oil distilled from opoponax resin, a hardened milky exudation from the root of *Balsamodendron Kafal* (probably). Whether this is so or not, the fact is worthy of record that the true resin comes into the market on very rare occasions only. The first formula given is that published by Piesse; the second provides a better product:—

I

Grain musk	ʒj.
Vanilla	ʒviij.
Tonka beans	ʒiv.
Spirit	Ox.

Macerate for a month and add to the filtrate

Tincture of orris	Oiv.
Millefleurs extrait	Oviij.
'Citron zeste'	ʒij.
Oil of bergamot	ʒij.
Otto of rose	ʒiss.
Oil of opoponax	ʒss.

Mix.

II

Grain musk	ʒss.
Vanilla	ʒss.
Tonka beans	ʒij.
Spirit	ʒxxv.

Macerate for a month and add

Oil of citron	ʒj.
Oil of bergamot	ʒj.
Oil of citronella	♏xv.
Oil of lemon	♏xv.
Otto of rose	♏L.
Oil of patchouli	ʒss.
Violet extrait	ʒxvj.
Rose extrait	ʒx.
Tincture of orris	ʒx.
Cassie extrait	ʒv.
Orange-flower extrait	ʒv.

Mix.

Osborne Bouquet

Otto of rose	♏L.
Essence of musk	ʒj.
Essence of ambergris	ʒij.
Spirit of vetivert	ʒiij.
Spirit of santal	ʒv.
Jasmine extrait	ʒvi.
Tincture of orris	ʒx
Violet extrait	ʒx.
Cassie extrait	ʒx

Mix.

Oriental Bouquet

Oil of lavender	♏c.
Otto of rose	ʒj.
Jasmine extrait	ʒiiss.
Essence of vanilla	ʒiiss.
Spirit to	Oij.

Mix.

Oxford and Cambridge Bouquet

Oil of lemon	♏xl.
Oil of bergamot	ʒj.
Tincture of storax	ʒj.
Essence of musk	ʒiij.
Essence of patchouli	ʒiij.
Spirit of geranium	ʒiv.
Essence of vanilla	ʒv.
Spirit of santal	ʒv.
Spirit of rose	ʒx.
Cassie extrait	ʒx.
Jasmine extrait	ʒx.
Rose extrait	ʒx.
Tuberose extrait	ʒx.
Violet extrait	Oj.

Mix.

Lady Palmerston's Bouquet

Ol. rosæ virgin.	ʒij.
Extrait violæ	ʒvij.
Extrait jasmin.	ʒviiss.
Extrait cassiæ	ʒviss.
Ol. bergamot.	ʒivss.
Ol. cassiæ	♏x.
Ol. santal. flav.	♏x.
Ol. caryoph.	♏xvj.
Ambergris	gr. xv.
Moschi	gr. xiij.
Sacchari albi	gr. viij.
Balsam. peruv.	♏xij.
Spt. rectificat.	Oij.

Macerate fourteen days and filter.

Essence of Patchouli

I

Oil of patchouli	ʒiiss.
Otto of rose	♏xx.
Jasmine extrait	ʒij.
Spirit	Oj.

Mix.

II

Oil of patchouli	ʒj.
Jockey Club	ʒvj.
Jasmine extrait	ʒij.
Rectified spirit	ʒviij.

Mix.

Orange-flower Bouquet

Essence of musk	ʒij.
Cassie extrait	ʒij.
Orange-flower extrait	ʒxij.

Mix.

Persian Essence

Oil of bergamot	ʒvj. ♏xl.
Oil of lemon	ʒv.
Oil of lavender	ʒiij. ♏xx.
Otto of rose	ʒj. ♏xx.
Oil of cloves	♏xl.
Essential oil of nutmeg	ʒiij. ♏xx.
Essence of musk	ʒiiss.
Spirit	Oj.

Mix.

Sweet Pea

I

Coumarin	gr. x.
Jasmine extrait	ʒj.
Spirit of rose	ʒv.
Orange-flower extrait	ʒv.
Tuberose extrait	ʒv.

Mix.

II

Otto of rose	♏viij.
Tincture of storax	ʒj.
Essence of vanilla	ʒij.
Violet extrait	ʒvij.
Rose extrait	ʒx.
Orange-flower extrait	ʒx.
Tuberose extrait	ʒxiij.

Mix.

Pine Bouquet

Olei pini sylvestris	ʒiiss.
Olei juniperi	ʒiiss.
Olei rosmarini	♏lxxx.
Olei lavandulæ	♏xlv.
Olei limonis	ʒss.
Spt. rectificat. ad	Oij.

M.

Pinafore Bouquet

Oil of coriander	♏x.
Oil of thyme	♏x.
Oil of melissa	♏xx.
Oil of cardamoms	♏xl.
Oil of citron	ʒj.
Oil of bergamot	ʒij.
Essence of musk	ʒj.
Spirit of neroli	ʒviij.
Violet extrait	ʒxij.
Spirit of rose	ʒxvj.

Mix.

Queen-of-the-Night Bouquet

Jasmine extrait	ʒx.
Violet extrait	ʒxij.
Rose extrait	ʒvij.
Reseda extrait	ʒij.
Jonquil extrait	ʒij.
Orange-flower extrait	ʒj.
Essence of musk	ʒj.
Essence of civet	ʒss.
Tincture of vanilla	ʒiij.
Oil of ylang-ylang	ʒj.
Oil of cedar	♏xij.
Oil of cloves	♏viij.
Oil of geranium	♏iv.
Rectified spirit	ʒss.

Dissolve the oils in the spirit and add to the rest of the ingredients mixed in the order given.

Rondeletia

Otto of rose	ʒj.
Oil of bergamot	ʒv.
Oil of cloves	ʒvj.
Oil of lavender	ʒxj.
Essence of ambergris	ʒiiss.
Essence of musk	ʒiiss.
Essence of vanilla	ʒiiss.
Spirit to	Oiij.

Mix.

Damask Rose Bouquet

Essence of vanilla	ʒj.
Essence of musk	ʒij.
Tincture of Tonka bean	ʒij.
Spirit of rose	ʒviij.
Tuberose extrait	ʒviij.

Mix

Moss Rose

I

Otto of rose	ʒiss.
Essence of ambergris	ʒiiss.
Essence of musk	ʒj.
Rose-water (triple)	ʒv.
Rectified spirit	Oj.

Mix and allow to stand for at least a week before filtering.

II

Essence of civet	ʒij.
Essence of musk	ʒiv.
Spirit of rose	Oj.
Orange-flower extrait	Oj.
Jasmine extrait	Oj.
Violet extrait	Oj.
Rose extrait	Oij.

Mix.

Tea Rose

Tincture of orris	ʒv.
Spirit of neroli	ʒv.
Spirit of santal	ʒx.
Spirit of geranium	Oj.
Spirit of rose	Oj.
Rose extrait	Oj.

Mix.

Sometimes an ounce of tincture of storax is added to each pint of this perfume with good effect.

White Rose

I

Oil of rose-geranium	♏x.
Otto of rose	♏xxv.
Jasmine extrait	ʒj.
Tincture of orris	ʒj.
Water	ʒj.
Spirit to	ʒv.

Mix.

II

Spirit of rose	ʒiv.
Violet extrait	ʒij.
Jasmine extrait	ʒj.
Essence of ambergris	ʒss.

Mix.

III

Concrete jasmine, washing No. 1	2 lbs. 5 oz.
Concrete violet, washing No. 3	2 lbs. 7 oz.
Concrete violet, washing No. 1	1 lb. 2 oz.
Oil of neroli	10 gr.
Oil of asarum canadense	20 gr.
Oil of rose-geranium	½ dr.
Essence of rose	1½ lb.
Tincture of orris	½ oz.

All by weight. Mix, let stand for two hours, then add 1 lb. of rose-water in small quantities, shaking well after each addition. Let stand for twenty-four hours, and filter through linen and finely powdered fullers' earth.

IV

Rose extrait	ʒxiiss.
Violet extrait	ʒiiss.
Spirit of santal	ʒx.
Jasmine extrait	ʒx.

Mix.

Rose-petals

Jasmine, No. 1, from concrete perfume	ʒxxiv.
Jasmine, No. 2, from concrete perfume	ʒxvj.
Rose, No. 1, from concrete perfume	ʒxvj.
Rose, No. 2, from concrete perfume	ʒxij.
Solution of artificial musk, 1 per cent.	ʒij.
Otto of rose	♏xxiv.
Oil of lily of the valley	♏xxiv.

Mix and colour yellow or pink.

Rose-pink

Follow the formula for rose-petals, but use eugenol ♏xij. in place of oil of lily of the valley.

Yellow Rose

Essence of musk	ʒiij.
Spirit of verbena	ʒiv.
Tincture of Tonka bean	ʒv.
Violet extrait	ʒx.
Spirit of rose	ʒxv.
Rose extrait	Oiss.
Tuberose extrait	Oiss.

Mix.

Royal Extract of Flowers

Orris-root (bruised)	ʒiv.
Yellow sandalwood	ʒss.
Grain musk	gr. iv.
Oil of cloves	♏xx.
Oil of pimento	♏xx.
Oil of lemon	ʒij.
Oil of lavender	ʒij.
Oil of bergamot	ʒiv.
Essence of ambergris	ʒiv.
Violette de Parme extrait	ʒviij.
Jasmine extrait	ʒviij.
Spirit	Oij.

Macerate for fourteen days and filter.

Royal Essence

Ambergris	℈iv.
Grain musk	℈ij.
Civet	℈j.
Oil of cinnamon	♏xij.
Oil of rhodium	♏viij.
Otto of rose	♏viij.
Spirit	ʒviij.

Macerate a month and filter.

Essentia Odorata

This perfume may be called by any fanciful name which the maker chooses.

Oil of lavender	ʒiss.
Oil of cloves	♏XLV.
Oil of bergamot	♏L.
Oil of cassia	ʒss.
Oil of neroli	♏xx.
Spirit	ʒj.
Royal essence	ʒviij.

Mix.

The Ryde Bouquet

Ol. limonis	ʒj.
Ol. rosæ virgin.	mlxxx.
Ol. amygdal. amar. ess.	mvij.
Ol. aurant. flor.	mxxx.
Moschi gran.	gr. xiv.
Rad. iridis cont.	ʒiij.
Fabæ tonkinensis cont.	ʒij.
Extrait jasmin.	ʒiv.
Spt. rectificat.	℥xliv.

Macerate for seven days and filter.

Sicilian Essence

'A splendid perfume, suitable for the nobility'

Ol. lavand. ang.	ʒiij.
Ol. caryoph. ang.	ʒss.
Ol. bergamot.	ʒiv.
Ol. santal. flav.	mxx.
Ol. rosæ virgin.	ʒj.
Ess. ambergris	ʒiv.
Ess. moschi	℥xij.
Heliotrop. (No. 3)	ʒiv.
Extrait Maréchale	ʒj.
Spt. rectificat.	℥vij.

M.

Spring Flowers

I

Oil of bergamot	ʒj.
Essence of ambergris	ʒj.
Cassie extrait	ʒj.
Spirit of rose	ʒj.
Violet extrait	℥vj.
Rose extrait	℥vij.

Mix.

II

Oil of verbena	mXL.
Oil of rose-geranium	mxxxv.
Oil of sandalwood	mxxv.
Oil of lavender	mxx.
Oil of bergamot	ʒij.
Otto of rose	mv.
Oil of neroli	mv.
Tincture of Tonka bean	ʒj.
Ess. millefleur	ʒiss.
Essence of vanilla	ʒiv.
Orange-flower extrait	ʒiss.
Essence of musk	ʒss.
Concentrated rose-water	ʒij.
Spirit to	Oj.

Mix.

Stephanotis

Otto of rose	ʒss.
Oil of neroli	ʒss.
Oil of bergamot	ʒj.
Cassie extrait	ʒiv.
Tuberose extrait	ʒiv.
Tincture of benzoin	ʒiv.
Tincture of storax	ʒiv.
Tincture of Tonka bean	ʒiij.
Tincture of orris	℥viij.
Spirit	Oj.
Essence of musk	Oiss.
Jasmine extrait	Oiss.

Mix.

Upper Ten Bouquet

Oil of lemon	mxv.
Oil of bergamot	ʒiss.
Orange-flower extrait	ʒiij.
Spirit of rose	ʒiij.
Essence of ambergris	ʒiij.
Tincture of orris	ʒiij.
Tincture of vanilla	ʒiv.

Mix.

Verbena

Oil of neroli	ʒss.
Oil of lemongrass	ʒiij.
Oil of lemon	ʒss.
Orange-flower extrait	ʒiiss.
Spirit of rose	ʒiiss.
Spirit to	Oj.

Mix.

Victoria Bouquet

Essential oil of almonds	miij.
Oil of neroli	miv.
Otto of rose	mxvj.
Oil of cinnamon	mvj.
Oil of cloves	ʒj.
Oil of lemon	ʒij.
Oil of bergamot	ʒij.
Millefleurs	ʒij.
Violet extrait	ʒij.
Jasmine extrait	ʒij.
Essence of musk	ʒiij.
Essence of ambergris	ʒiij.
Spirit	℥xij.

Mix.

Essence of Violets

This and other violet perfumes should be coloured with chlorophyll, or with ext. cannabis indicæ or hempseed if chlorophyll is not at hand. On the manufacturing scale, oil of orris is much used. *Ionone* and other artificial violet perfumes need the natural odour as well.

I

Tincture of benzoin	ʒj.
Tincture of orris	ʒj.
Essence of musk	ʒij.
Jasmine extrait	ʒij.
Cassie extrait	ʒiv.
Rose extrait	ʒiv.
Violet extrait to	Oiss.

Mix.

II

Ionone spirit	ʒxx.
Spirit of rose	ʒiv.
Jasmine solution (Schimmel's, 1 in 10)	ʒiv.
Orris solution	ʒxij.
Solution of orange (1 in 10)	ʒix.
Synthetic musk solution	ʒiss.
Artificial ylang-ylang	ʒj.
Tincture of benzoin	ʒvj.

Mix.

III

Ionone spirit	ʒxx.
Orris solution	ʒx.
Solution of cassie (Heine, 1 in 20)	ʒv.
Vanillin solution	ʒiiss.
Tincture of benzoin	ʒss.
Synthetic musk solution	ʒij.

Mix.

IV

Siam benzoin	gr. x.
Oil of patchouli	♏v.
Oil of sandalwood	♏v.
Oil of rosemary	♏xx.
Tincture of Indian hemp	♏xx.
Oil of bergamot	♏xxv.
Essence of musk	ʒj.
Ionone (10-per-cent. sol.)	ʒj.
Otto of rose	ʒj.
Rectified spirit	ʒx.
Tincture of orris	ʒxxij.

Set aside for a week and filter.

Violette de Parme

I

Ionone	ʒiss.
Tincture of orris	ʒv.
Tincture of Indian hemp	♏xx.
Spirit	ʒxv.

Mix.

II

Essential oil of almonds	♏x.
Oil of neroli	♏x.
Ionone	ʒij.
Tincture of benzoin	ʒij.
Violet extrait (or tincture of orris)	ʒj.
Jasmine extrait	ʒj.
Rectified spirit	ʒxvj.
Water	ʒiv.

Mix, colour with ext. cannab. ind., and filter.

Volunteer's Garland

Oil of cloves	♏x.
Otto of rose	♏L.
Oil of rose-geranium	ʒj.
Oil of neroli	ʒij.
Oil of lavender	ʒij.
Oil of bergamot	ʒij.
Essence of civet	ʒss.
Essence of ambergris	ʒss.
Essence of musk	ʒij.
Jasmine extrait	ʒvij.
Cassie extrait	ʒvij.
Violet extrait	ʒx.
Tincture of orris	Oj.
Spirit	Oj.

Mix.

Wallflower

Orange-flower extrait	Oj.
Essence of vanilla	ʒx.
Tincture of orris	ʒx.
Cassie extrait	ʒx.
Spirit of rose	Oj.
Essential oil of almonds	♏v.

Mix.

West-end Bouquet

Oil of sandalwood	♏xx.
Spirit of verbena	℥j.
Essence of civet	℥j.
Essence of musk	℥ij.
Tincture of benzoin	℥ij.
Spirit of rose	℥vj.

Mix.

Windsor Castle Bouquet

Otto of rose	℥ij.
Oil of neroli	℥ij.
Oil of lavender	℥ij.
Oil of bergamot	℥ij.
Oil of cloves	♏viij.
Essence of musk	℥iiss.
Essence of ambergris	℥iiss.
Jasmine extrait	Oj.
Tincture of orris	Oj.
Spirit	Oj.

Mix.

Wood Violet

I

Cassie extrait	℥vj.
Rose extrait	℥iij.
Tuberose extrait	℥iij.
Violet extrait	℥iv.
Essential oil of almonds	♏xv.

Mix, add a little ext. cannab. ind. to colour, and filter.

II

Concrete jasmine, washing No. 3	3 lbs.
Essence of orris (1 per cent.)	5 oz.
Essence of artificial musk	7 oz.
Oil of lignaloe	♏x.
Oil of bergamot	♏x.
Oil of lemon	♏xij.
Rose-water	40 oz.

Mix, and after three days filter through fullers' earth.

X Y Z Bouquets

Under this heading we group a number of formulas for unnamed perfumes, so that chemists may select one or other for local or special names. Some of the old-fashioned bouquets which have already been given may also be utilised for the same purpose.

I

Oil of lemon	℥ss.
Otto of rose	♏xl.
Oil of neroli	♏xv.
Orris-root	℥iss.
Tonka beans	℥j.
Musk	gr. vij.
Spirit	℥xxiv.

Macerate for seven days and filter.

II

(A Superior Bouquet)

Oil of bergamot	♏l.
Oil of lemon	♏v.
Oil of lavender	♏iij.
Oil of cloves	♏j.
Tincture of orris	℥ss.
Essence of civet	℥j.
Coumarin	gr. j.
Heliotropin	gr. ¼
Jasmine extrait	℥iss.
Spirit	℥v.

Mix, and after ten days filter.

III

Oil of lemon	℥ij.
Oil of bergamot	℥ij.
Essence of musk	℥ij.
English oil of lavender	♏xx.
Oil of pimento	♏xx.
Oil of neroli	♏xx.
Otto of rose	♏x.
Oil of cinnamon	♏iij.
Essential oil of almonds	♏iij.
Oil of caraway	♏iij.
Grain musk	gr. v.
Rectified spirit	℥viij.

Allow to stand ten days, and filter.

IV

Oil of bergamot	ʒv.
Oil of neroli	ʒv.
Oil of lemongrass	ʒv.
Oil of ylang-ylang	ʒj.
Oil of rose-geranium	ɱiij.
Otto of rose	ɱXL.
Tincture of orris	Oj.
Spirit	Ov.

Mix, and add

Essence of musk	ʒv.
Tincture of benzoin	ʒiss.
New milk	ʒix.

Shake well, filter, set aside in a cool place for at least twenty days, then add 10 minims of oil of patchouli dissolved in an ounce of rectified spirit.

V

Otto of rose	ʒss.
Grain musk	gr. vj.
Spirit	ʒvj.

Mix, and filter after three weeks.

VI

Otto of rose	ʒviss.
Essence of patchouli	ʒiv.
Jasmine extrait	ʒv.
Violet extrait	Oj.
Spirit	Oiij.

Mix.

Yacht Club Bouquet

Benzoic acid	ʒij.
Spirit of santa	Oj.
Spirit of neroli	Oj.
Jasmine extrait	ʒx.
Spirit of rose	ʒx.
Essence of vanilla	ʒv.

Mix.

Ylang-ylang

I

Oil of ylang-ylang	ɱx.
Otto of rose	ɱij.
Oil of neroli	ɱx.
Essence of musk	ʒss.
Jasmine extrait	ʒij.
Orange-flower water	ʒij.

Mix.

II

Oil of neroli	ɱvj.
Oil of lemon	ɱv.
Otto of rose	ɱxv.
Oil of ylang-ylang	ɱL.
Essence of musk	ʒss.
Spirit to	Oij.

Mix.

III

Essence of civet	ʒj.
Jasmine extrait	ʒj.
Spirit of rose	ʒij.
Spirit of ylang-ylang to	ʒx.

Mix.

PERFUMED WATERS

These are of very ancient date, and do not differ much in general composition from other handkerchief-perfumes, except that floral pomades are rarely used in making them. Why these perfumes obtained the title 'waters' it would be difficult to tell. For centuries they have contained alcohol, and for centuries it has been known that this is a highly essential ingredient if permanence and quality are to be ensured. Thus John Baptista Porta, a Neapolitan of the seventeenth century, in his work on 'Natural Magic,' says :—

Wine, although it be not ſweet of it ſelf, yet being placed nigh any odour, it will draw it, becauſe it is full of heat, which doth attract. Water being cold

by nature, can neither attract, nor receive, nor keep any ſent; for it is ſo fine, ſlender and thin, that the odour flieth out again, and vaniſheth away, as if there were no foundation whereon it could fix and ſettle, as there is in Wine and Oyl, who are more tenacious of ſent, becauſe they are of a denſer and callous Body. Oyl is the beſt preſerver and keeper of ſent, becauſe it is not changeable; wherefore Perfumers ſteep their perfumes in Oyl, that it may ſuck out their ſweetneſs. We uſe wine to Extract the ſent of Flowers; and eſpecially *Aqua Vitæ*.

Porta proceeds to show the application of these principles in a formula for 'Musk-water.' 'This water,' writeth the author,

Setteth off all others, and maketh them richer; wherefore it is firſt to be made. Take the beſt *Aqua Vitæ* and put into it ſome Grains of Muſk, Amber, and Civet, and ſet them in the Sun for ſome dayes; but ſtop the veſſel very cloſe, and lute it; for that will very much add to the fragrancy of it.

From 'the leaves of lilies, jasmine, musk-roses, lavender-flowers, myrtle-flowers,' &c., the 'sweet sent' was extracted in the same manner. It is evident from this that these perfumes were not 'waters' in the proper sense of the term, but spirituous solutions of essential oils. A considerable number of them were at one time popular, and it is only within the last two generations that 'bouquets' derived from floral pomades have replaced them. A few of the old scents remain popular; lavender-water and Eau de Cologne between them supply the bulk of scent used by the public, and there is still some use for honey-water, while ess. bouquet appears to be a refinement of the Water of Bouquet which was famous at the beginning of the nineteenth century.

It may not be unprofitable to give the formulas for some of these obsolete waters, if for no other purpose than to rescue them from oblivion.

Bouquet's Water

Take of the flowers of white lilies and Spanish jessamin, of each ½ lb.; orange flowers and those of the jonquil and pink, of each 4 oz.; damask roses, 1 lb. Let them be fresh gathered and immediately put into a glass alembic with a gallon of clean proof spirit and 2 quarts of water. Distil off till the faints begin to rise.

Cyprus Water, or Eau de Cypre

Take of the essence of ambergris ½ oz., put into a glass alembic with 1 gallon of spirit of wine and 2 quarts of water. Distil a gallon.

Honey-water (Aqua Mellis)

'The water of the honey-combe' or 'dystilled honey' was recommended by Theophrastus, who died in 286 B.C., for preventing the hair falling off and causing it to grow. There were many ancient methods of making the water. Here is one from the 'Newe Jewell of Health' (George Baker, 1576) :—

The water of honie to make the face whyte and faire : take of reddiſh honie twoo pounds, of Gumme Arabecke twoo ounces, theſe twoo mix togither, and dyſtill by a Lymbecke with a ſoft fire : the firſt water that commeth, ſerveth unto the cleanſing of the face, and unto the clearing and whytening of it : the ſecond with the thirde lycour, doth cauſe the haares to grow and become whytiſh or flaxen of colour.

In time the destructive distillation of honey was effected by mixing honey (4 lbs.) with dry sand (2 lbs.), and distilling with a very gentle heat. The distillate was a yellowish acid water, slightly odorous, according to the nature of the honey. The basis of modern recipes for honey-water is a formula devised by George Wilson, author of 'The Compleat Course of Chymistry,' who compounded it for King James II. Wilson was for fifty years in business as an apothecary in London, throughout the Great Plague and until the Great Fire, at the sign of Hermes Trismegistus in Watling Street. His formula for the preparation is as follows :—

Best honey	1 lb.
Coriander-seed	1 lb.
Cloves	1½ oz.
Nutmegs	1 oz.
Gum benjamin	1 oz.
Storax	1 oz.
Vanilloes	No. 4
The yellow rind of three large lemons.	

Bruise the cloves, nutmegs, coriander-seed, and benjamin, cut the vanilloes in pieces, and put all into a glass alembic with 1 gallon of French brandy, and, after digesting forty-eight hours, draw off the spirit by distillation. To 1 gallon of the distilled spirit add

Damask-rose water	1½ lb.
Orange-flower water	1½ lb.
Musk	5 gr.
Ambergris	5 gr.

Grind the musk and ambergris in a glass mortar, and afterwards put all together into a large matrass and let them circulate three days and three

nights in a gentle heat ; then let all cool. Filter, and keep the water in bottles well stopped.

Wilson in his book states :—'This water I often made for King James II. It is an anti-paralytick, smooths the skin and gives one of the most agreeable scents that can be smelt. Forty or fifty drops put into a pint of clean water are enough to wash the hands or face with ; and the same proportion to punch or any cordial-water gives a most pleasant flavour.' The demand for honey-water nowadays is chiefly due to the late Sir Erasmus Wilson, in his time the leading skin and hair specialist, who prescribed it in the hair-wash that goes by his name. Some think that Sir Erasmus meant the ancient water such as Theophrastus prescribed, but it was not so. His prescriptions were compounded with a perfume-water resembling George Wilson's. The following are good examples of present-day formulas for honey-water :—

I

Benzoin. siamensis . .	ʒxvj.
Styracis calam. . .	ʒiv.
Caryophylli . . .	ʒviij.
Calami arom. radic. .	ʒxij.
Cort. aurant. . . .	ʒxij.
Sem. coriand. . .	ʒxij.
Rad. iridis flor. . .	ʒviij.
Fabæ tonkæ . . .	ʒij.
Spt. rectificat. . .	Ovj.
Aq. flor. aurant. . .	Oij.
Aq. rosæ . . .	Oij.

Macerate for forty days and filter. Distil the filtrate.

II

Oil of cloves . . .	ʒss.
Oil of bergamot . .	ʒx.
English oil of lavender .	ʒiss.
Musk	gr. iv.
Yellow sandalwood . .	ʒiiss.
Rectified spirit . .	ʒxxxij.
Rose-water . . .	ʒviij.
Orange-flower water .	ʒviij.
English honey . .	ʒij.

Macerate the musk and sandalwood in the spirit seven days, filter, dissolve the oils in the filtrate, add the other ingredients, shake well, and do so occasionally, keeping as long as possible before filtering. Sandalwood oil ɱv. may be used instead of the wood.

III

Ol. bergam. . .	ʒiss.
Ol. limonis . . .	ʒj.
Ol. lavand. . . .	gtt. XLV.
Ol. caryoph. . .	gtt. XLV.
Spt. rectificat. . .	ʒviij.
Tr. iridis flor. . .	ʒiv.
Aq. flor. aurant. . .	ʒiv.

M.

IV

English oil of lavender .	ʒij.
Oil of lemon . .	ʒij.
Oil of bergamot . .	ʒij.
Essence of ambergris .	ʒij.
Essence of musk . .	ʒij.
Essential oil of almonds	ɱij.
Oil of neroli . .	ɱij.
Oil of cinnamon . .	ɱiv.
Oil of cloves . .	ɱiv.
Oil of nutmeg . .	ɱiv.
Otto of rose . . .	ɱiv.
Essence of millefleurs .	ʒss.
Orange-flower water .	ʒx.
Rectified spirit to .	Oiss.

Mix.

Hungary-water

The Old Recipe

Take of the flowering tops, with the leaves and flowers of rosemary, 14 lbs.; rectified spirit, 11½ gals.; water, 1 gal. Distil off 10 gals.

Some add lavender-flowers, and others Florentine orris-root; but what is most esteemed is made with rosemary only.

The Modern Perversion

Oil of peppermint	℥ss.
Oil of lemon	℥j.
Oil of melissa	℥j.
Oil of rosemary	℥ij.
Orange-flower extrait	℥xvj.
Rose extrait	℥xvj.
Rectified spirit	Cong. j.

Mix.

Spt. rosmarini, B.P., is sometimes given for aqua hungaricæ, also ol. rosmar. ℥x., ol. limon. ℥iiiss., S.V.R. ℥xxx.; and we have also seen rose-water given along with sulphate of zinc for eye-lotions. Many formulas for Eau de la Reine de Hongrie exist. For an interesting account of its origin *see* Wootton's 'Chronicles of Pharmacy,' I., 297.

L'Eau sans Pareille

Oil of cedrat	℥ij.
Oil of bergamot	℥ij.
Oil of orange	℥ij.
Oil of lemon	℥ij.
Rectified spirit	Cong. j.
Water	Oiv.

Distil 1 gal.

Eau de Vestale, or Vestal Water

'Take of the seeds of *Daucus creticus*, or Candy carrots, 2 oz.; spirit of wine, 1 gallon; water, 2 quarts. Distil until the faints begin to rise, then add to the spirit drawn over 1 oz. of the essence of lemons and 4 drops of the essence of ambergris. Re-distil, and keep the water in a bottle, well stopped for use.'

Royal Water

'Take of mace, 1 oz.; nutmegs, ½ oz.; bruise them and put them into an alembic with 6 quarts of proof spirit, and draw off 5 quarts with a gentle fire. Then take the spirit drawn off, and put into a glass alembic, with 2 dr. of essence of cedrat or bergamot, and draw off a gallon.'

Lavender-water

This, the most famous of all the perfumed waters, was originally a distillate from a mixture of spirit and lavender-flowers. This was the perfume. Then came a compound water, or 'Palsy Water,' which is now represented in tr. lavand. co., strictly for use as a medicine, but sometimes containing ambergris and musk as well as red sanderswood. This old compound, *minus* the colouring, seems to have been the progenitor of the perfume; at any rate, the nearer one can

get in a formula and in practice to lavender and a fixer, such as musk, the better is the perfume. The most important precaution in making lavender-water is to use well-matured English oil of lavender. Some who take pride in this perfume use no oil less than five years old, which has had 1 oz. of rectified spirit added to each pound of oil before being set aside to mature. The perfume, after mixing, should stand for at least a month before filtering through English grey filtering-paper. This may be taken as a general instruction.

I

Ol. lavandulæ ang.	ʒiss.
Ol. bergamot.	ʒiv.
Ess. ambergris	ʒiv.
Spt. rectificat.	Oiij.

M.

II

English oil of lavender	ʒss.
Oil of bergamot	ʒij.
Essence of ambergris	ʒj.
Essence of musk (No. 1)	ʒj.
Oil of angelica	mij.
Otto of rose	mvj.
Spirit to	Oj.

Mix.

III

Mitcham oil of lavender	ʒiv.
Grain musk	gr. xv.
Oil of bergamot	ʒiiss.
Otto of rose	ʒiss.
Oil of neroli	ʒss.
Spirit of nitrous ether	ʒiiss.
Triple rose-water	ʒxij.
Spirit	Ov.

Allow to stand five weeks before filtering.

IV

Oil of lavender	ʒj.
Tincture of Tonka bean	ʒiiss.
Essence of ambergris	ʒiiss.
Spirit of nitrous ether	ʒv.
Melissa-water	ʒxviij.
Spirit to	Ovss.

Mix.

V

Sugar of milk	ʒj.
Grain musk	gr. x.
Boiling water	ʒij.

Rub up the musk with the sugar for five minutes, then digest in the water for an hour, and when cold add to the following :—

Oil of lavender	ʒiss.
Oil of cloves	ʒij.
Oil of bergamot	ʒvj.
Orris-root	ʒiss.
Spirit	Oiij.

Macerate for a fortnight and filter.

VI

English oil of lavender	ʒss.
Foreign oil of lavender	ʒss.
Oil of bergamot	ʒss.
Oil of cloves	mx.
Essence of musk	ʒij.
Oil of rosemary	ʒj.
Oil of petitgrain	ʒj.
Triple rose-water	ʒij.
Spirit to	Oiss.

Mix.

VII

Foreign oil of lavender	ʒss.
Oil of cloves	ʒiss.
Oil of bergamot	ʒiss.
Essence of ambergris	ʒiij.
Essence of musk	ʒiij.
Tincture of Tonka bean	ʒj.
Tincture of orris	ʒj.
Triple rosé water	ʒv.
Spirit to	Oij.

Mix.

VIII

George IV. Lavender-water

Mitcham oil of lavender	ʒvj.
Essence of musk	ʒvj.
Essence of millefleurs	ʒvj.
Oil of bergamot	ʒiij.
Otto of rose	ʒss.
Rectified spirit	ʒxlviij.

Mix.

A delightful perfume, which was really prepared for and used by 'the First Gentleman in Europe.'

IX

Ol. lavand. ang.	ʒiv.
Ol. bergam. super.	ʒj.
Ol. cedrat.	ɱx.
Ol. rosmarin. ang.	ɱx.
Ol. caryoph. ang.	ɱx.
Mosch. gran.	gr. ij.
Ol. rosæ virgin.	ɱx.
Aq. flor. aurant. tripl.	ʒj.
Aq. rosæ tripl.	ʒj.
Aq. destil.	ʒij.
Spt. rect. ad	ʒxxv.

M.

X

Ol. lavand. ang.	ʒij.
Ol. lavand. exot.	ʒij.
Ess. moschi	ʒj.
Ol. bergam.	ʒss.
Ol. caryoph.	ɱxv.
Spt. æther. nit.	ʒij.
Spt. rect.	ʒxiv.
Aq. flor. aurant. tripl.	ʒij.

M.

XI

Ol. lavandulæ ang.	ʒvj.
Essentiæ ambergris	ʒiss.
Ol. bergamot.	ʒiij.
Ol. rosæ virgin.	ʒij.
Moschi gran. opt.	gr. xx.
Aquæ destillatæ	ʒxxiv.
Alum. ust.	ʒiv.
Spt. rectificati	Oxij.

Macerate for a month.

XII

English oil of lavender	ʒj.
Oil of bergamot	ʒiss.
Essence of musk (No. 2)	ʒss.
Essence of ambergris	ʒss.
Spirit to	Oij.

XIII

Ol. lavandulæ ang.	ʒiij.
Ol. bergamot.	ʒx.
Ol. rosæ virgin.	ɱxij.
Ol. caryophylli	ɱx.
Ol. neroli super.	ɱXL.
Ess. ambergris	ʒss.
Ess. moschi	ʒij.
Ol. limonis	ʒss.
Spt. æther. nitrosi	ʒss.
Spt. rectificati	Ovj.

M.

XIV

Ol. neroli super.	ɱxx.
Ol. lavand. ang.	ʒss.
Ol. lavand. exot.	ʒiss.
Essent. moschi	ʒiss.
Essent. zibethi	ʒiss.
Aq. rosæ tripl.	ʒiv.
Spt. rectificat.	ʒxxxv.

Mix and set aside for several weeks, then filter through a double filter-paper.

XV

Ol. lavand.	ʒiv.
Ol. bergam.	ʒvj.
Ol. limon.	ʒij.
Ol. neroli	ʒss.
Ol. caryoph.	ʒss.
Moschi	gr. vj.
Aq. rosæ tripl.	ʒx.
Spt. rectif.	Cong. j.

M.

XVI

Eau de Lavand Ambrée

Oil of lavender	ʒss.
Oil of neroli	ɱx.
Essence of ambergris	ʒj.
Essence of musk	ʒj.
Rectified spirit to	ʒxxx.

Mix.

The simplest lavender-waters are the best 'lavenders'—not necessarily, however, the best perfumes. Ambergris, or civet, or musk, is essential for bringing out the fine odour of lavender. Civet is specially serviceable in this respect. The foregoing are examples of the different kinds of formulas in use. Keep the water as long as possible before filtering, and filter through grey paper only which has been warmed in an oven.

Eau de Cologne vel Aqua Coloniensis

The 'Farinas' of Cologne are more than outnumbered by recipes for the perfumes which they compound. Our difficulty is to make a choice out of the multitude, to avoid repetitions, to keep out the bad, or, rather, not to overlook the best. Let us begin well, however, with these two formulas which *The Chemist and Druggist* has immortalised :—

I

Sydney Gold Medal

Ol. bergamot. . .	♏xiv.
Ol. citron. . . .	♏xxxv.
Ol. neroli petal. . .	♏xx.
Ol. neroli bigarad. . .	♏vij.
Ol. rosmarini . . .	♏xiv.
Spt. rectif. . . .	ʒxiiss.

M.

II

Paris Exhibition Prize

Ol. bergamot. . .	ʒij.
Ol. limonis . . .	ʒj.
Ol. neroli . . .	gtt. xx.
Ol. origani . . .	gtt. vj.
Ol. rosmarini . . .	gtt. xx.
Spt. rectificat. . .	℥xx.
Aq. flor. aurant. tripl. .	℥j.

Mix in this order.

These, it will be seen, differ very materially from each other; but each has its history, and both are honourable. The first was published many years ago in *The Chemist and Druggist*. A chemist in Australia made the product a stock article, pushed its sale, exhibited it at the Sydney Exhibition, and for it he obtained a gold medal. The second was one of 219 sent in competition for a prize consisting of a free trip to the Paris Exhibition of 1889, which was offered by a well-known firm of distillers. An equally well-known firm of perfume-distillers adjudicated, and pronounced the product of the formula closely to resemble the genuine Farina. Neither of these is specially remarkable when first prepared; it is only by

keeping six or eight months that their excellence becomes manifest.

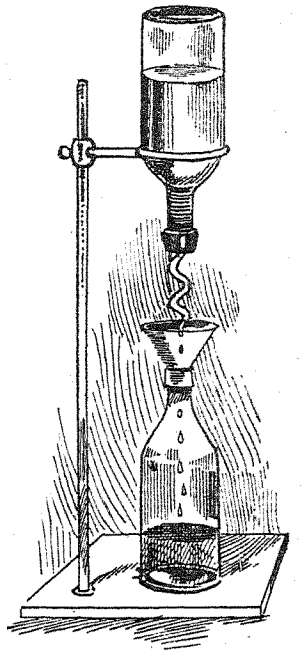
A very good authority states that Eau de Cologne to be of first quality must contain oil of lemon and grape-spirit. We know also that the Farinas distil the perfume and keep it for a time in bulk before it is bottled. The presence of neroli is essential, that being the characteristic odour of the water; indeed, the fact is noteworthy that most of the constituents are derived from the orange family. Rosemary is a necessary accompaniment; but all other odours, such as musk, civet, and cloves, with which some are apt to load it, are injurious to the refreshing character of Eau de Cologne. There is a mistaken belief that none of the imitations of the continental article approach it in delicacy. This is probably due to the fact that the imitations are generally more charged with essences than the original, and distilling has unquestionably a subtle influence upon the fragrance of the contained essences. What this influence may be can only be conjectured, but that some molecular reconstruction of the essential oils takes place on distilling and keeping seems to be most probable. It becomes important, therefore, that the retail manufacturer should hasten this change through some other influence than time, and there are two simple methods which may be adopted. One of these is explained in the following formula, which is at least a century old :—

III

Oil of neroli	♏x.
Oil of lemon	♏xL.
Oil of bergamot	♏L.
Oil of cedrat	♏xv.
Oil of lavender	♏xviij.
Oil of rosemary	♏x.
Melissa-water	℥ivss.
Rectified spirit	℥xxx.

Put the oils and the spirit in a strong flask, giving the mixture a thorough shaking; then close the flask and keep the contents just warm (120° F.) for forty-eight hours, whereby perfect blending of the oils with the spirit is ensured. Then place it for twenty-four hours in a cool place, after which filter it through paper until it is obtained perfectly clear. With the filtrate mix the melissa-water.

Another very ingenious method for 'mellowing' is illustrated in the accompanying engraving. A glass tube about a foot long is twisted like a corkscrew, and the orifice narrowed to about $\frac{1}{16}$ inch: this is fitted by means of a cork into a bottle containing the freshly-mixed Eau de Cologne. The bottle is then inverted, and the contents allowed to trickle into the receiver. This has to be done in the direct rays of the sun before noonday, and the operation should be repeated five or six times. There is comparatively little loss by evaporation, and the perfume is distinctly improved. The solar rays play an important part in this change.



IV

Like 'Springbrunn' Brand

Ol. aurant. cort. . .	♏xxx.
Ol. limonis . . .	♏xxx.
Ol. bergamot. . .	♏xij.
Ol. neroli bigarad. . .	♏j.
Ol. neroli petal. . .	♏ij.
Ol. rosmarini . . .	♏iv.
Spt. rectificati . .	℥xvj.

M.

V

Like 'Jülichs-platz No. 4'

Ol. aurant. cort. . .	♏xxvj.
Ol. limonis . . .	♏xxxiv.
Ol. bergamot. . .	♏xiv.
Ol. aurant. flor. . .	♏xiv.
Ol. rosmarini . . .	♏xiv.
Spt. rectificati . . .	℥xvj.

M.

While the use of grape-spirit is undoubtedly advantageous, 1 part of this to 3 parts of treble-distilled grain-spirit may be used, the product being superior to that in which grain-spirit alone is employed; but it should be noted that grape-spirit is an exceedingly rare commodity in the United Kingdom, just

as it is on the Continent, where it is practically all absorbed in the manufacture of brandy. Doubtless traces of the higher alcohols and aldehydic bodies in this spirit, differing from those in grain-spirit, have something to do with the distinctiveness of Farina 'Cologne,' and etherification between the oils and the spirit takes place during distillation and keeping, thereby producing the fine odour of old Eau de Cologne. The same thing must take place with grain-spirit under similar conditions, but these conditions seldom exist in pharmacy. What the drug trade generally supply of their own make is a mixed, not a distilled, Eau de Cologne, and for that the triple-distilled rectified spirit is the best. It is almost free from higher alcohols.

VI

Oil of bergamot	ʒiiss.
Oil of lemon	ʒj.
Oil of Portugal	♏L.
Oil of neroli	♏xx.
Oil of petitgrain	♏x.
Oil of lavender (English)	♏xx.
Oil of rosemary	♏x.
Oil of melissa	♏v.
Spirit	ʒxxx.
Rose-water (triple)	ʒxiv.
Orange-flower water (trip.)	ʒxiv.

VII

Oil of bergamot	♏c.
Oil of lemon	♏L.
Oil of Portugal	ʒss.
Oil of petitgrain	♏x.
Oil of lavender	♏xx.
Oil of rosemary	♏xv.
Spirit	ʒxxx.
Rose-water (triple)	ʒix.
Orange-flower water (trip.)	ʒix.
Distilled water	ʒix.

The above formulas are for preparing the perfume by the cold method. The proper plan is to add the oils to the spirit in the order in which they are set down, shake well, and set aside for a few days, shaking occasionally before adding the waters. After these are added, set aside again for a week or two, and if not perfectly clear, filter.

VIII

Gegenüber dem Jülichs-platz

The secret of this Eau de Cologne has been most jealously guarded, nevertheless the following statement about it may be of interest:—

'Mix 350 grams (11 oz.) of lemon oil, 270 grams (8½ oz.) of bergamot oil, 20 grams (5 dr.) of the finest French lavender oil, 12 grams (3 dr.) of Mitcham peppermint oil, 120 drops of the best French oil of neroli, 100 drops of French oil of white thyme, 100 drops of the finest rosemary oil, 20 drops of otto of rose, 12 grams (3 dr.) of acetic ether, 1,100 grams (34 oz.) of distilled orange-flower water, and 200 grams (6 oz.) of rose-water. After this mixture has stood for six months dilute it with 5 to 7½ kilos. (8 to 12 pints) of spirit, and distil.'

IX

Ol. bergamottæ	ʒiiss.
Ol. portugal.	ʒiiss.
Ol. limonis	ʒss.
Ol. neroli	ʒss.
Ol. rosmarini	ʒss.
Spt. rectificat.	ʒxxxij.

M.

X

Formula of 1801

Oil of bergamot	ʒvj. ɱxv.
Oil of cedrat	ʒj.
Oil of lemon	ʒj.
Oil of lavender	ʒss.
Oil of Portugal	ʒj.
Oil of thyme	ɱiv.
Oil of neroli	ʒj. ɱxv.
Oil of rosemary	ʒj. ɱxv.
Spirit	Oiij. ʒij.

Mix and distil, then add to the distillate 2½ oz. of melissa-water and 5 oz. orange-flower water, and distil again.

XI

Ol. bergamottæ	ʒiij.
Ol. limonis	ʒiij.
Ol. cedrat.	ʒiij.
Ol. lavandulæ	ʒiss.
Ol. neroli	ʒiss.
Ol. rosmarini	ʒiss.
Ol. cinnamomi	ʒss.
Spt. rectificat.	Cong. ij. ʒxxxv.
Eau des carmes	ʒxlviij.
Spt. rosmarini	ʒxxxij.

Mix, allow to stand for eight days, and distil 365 oz. of the spirit.

No. XI. formula is that of the old French Codex, and a wonderful formula it is when we contrast it with No. IX., which is a later Codex recipe. There is no justification for cinnamon in Eau de Cologne. The following are French formulas which provide very good perfumes :—

XII

Ol. bergamot.	ʒij.
Ol. neroli	ʒj.
Ol. limonis	ʒj.
Ol. myrist.	ɱxj.
Ol. rosmarini	ɱvj.
Spt. rectificat.	ʒxx.

M.

XIII

Ol. portugal.	ʒss.
Ol. limon.	ʒss.
Ol. bergamot.	ɱxij.
Ol. neroli	ɱij.
Ol. petitgrain	ɱiij.
Ol. rosmarini	ɱiv.
Spt. rectificat.	ʒxvj.

M.

The well-meant efforts to reduce to uniformity many formulas are shown in No. XIV. and No. XIVa., the latter being a recent attempt. No. XV., also a foreign formula, provides a concentrated Eau de Cologne, which will bear dilution with ten times its volume of fine spirit. In this case dissolve the oils in the 10 oz. of spirit, and set aside for

fourteen days, shaking four times a day. Then distil the mixture twice, when the result will be 10 oz. of an exceedingly strong perfume, which improves in odour the longer it is kept, and is specially suited for exportation.

XIV

Ol. bergamottæ	ʒv.
Ol. limonis	ʒv.
Ess. moschi (1–50)	ʒj. ♏xv.
Ol. neroli	ʒss.
Ol. cinnamomi	♏xv.
Ol. caryoph.	♏xv.
Otto rosæ	♏xv.
Spt. rectificat.	ʒlvj.
Aquæ	ʒiv. M.

No. XIVA.—Ol. lavand. 0·5, ol. neroli 0·7, ol. bergam. 1, ol. limon. 1, spt. rectificat. 100. *All by weight.*

XV

Ol. portugal.	ʒiij.
Ol. bergamot.	ʒiij.
Ol. cedrat.	ʒij.
Ol. lavandul.	ʒij.
Ol. neroli	ʒiij.
Ol. petitgrain	ʒij.
Ol. rosmarin.	ʒss.
Ol. limon.	ʒss.
Spt. rectificat.	ʒx.

Compound as directed above.

XVI

Ol. neroli	♏L.
Ol. rosmarin.	♏xv.
Ol. bergamot.	♏lxxx.
Spt. rectificat.	ʒxvj.
Aq.	ʒv.

M.

XVII

Oil of bergamot	ʒx. ♏XL.
Oil of neroli	♏lxxx.
Otto of rose	ʒj.
Musk	gr. x.
Essence of vanilla	ʒij.
Jasmine extrait	ʒx. ♏XL.
Violet extrait	ʒx. ♏XL.
Spirit	Ov. ʒxij.
Water	ʒx.

Mix the oils and extraits with 104 oz. of the spirit; digest the musk with the remaining 8 oz. at a gentle heat in a closed bottle for twenty-four hours; then add to the other liquid, add the water, cool, and filter. If convenient, set aside for some weeks before filtering.

No. XVI. is 'like the genuine,' says our note-book; and if there be any virtue in repetition, we have that simple formula in various degrees as to quantities, but all reputed to provide 'the same thing.'

XVIII

Ol. bergamot.	ʒiij.
Ol. citronel.	ʒss.
Ol. rosmarin.	ʒss.
Ol. neroli	♏xviij.
Ess. mosch.	ʒij.
Ol. lavand. ang.	♏xvj.
Ol. verben.	♏xij.
Spt. rectificat.	ʒxxviij.
Aq. destil.	ʒij.

M.

XIX

Ol. lavand.	ʒss.
Ol. limonis	ʒss.
Ol. rosmarin.	ʒss.
Ol. bergamot.	ʒij.
Ol. cedrat.	ʒj.
Ol. neroli	ʒij.
Ol. caryoph.	ʒj.
Aq. flor. aurant. tripl.	ʒviij.
Spt. rectificat. ad	Cong. j.

M.

Reference has already been made to the great variety of foreign formulas. The subjoined table exhibits an instructive selection. The quantities are indicated in drachms, but 'dp.' stands for drops. Compare with these formulas No. VIII., which is reputed to give a product exactly resembling that of Farina.

——	Dieterich		Buchmeister		—	Askinson		Deite		Vomácka	
Spirit . . .	8,250	8,250	900	875	900	2,000	915	8,250	8,100	8,000	8,000
Water . . .	1,500	1,500	—	—	—	—	80	500	—	—	—
Oil of bergamot .	100	100	9	25	8	25	5	85	150	12	14
Oil of lemon . .	50	50	12	15	8	25	10	75	135	30	33
Oil of rosemary .	50	50	16 dp.	48 dp.	1	25	1	5	10	4	14
Oil of orange-flowers . .	30	10	1	1	2	30	—	—	40	3	14
Oil of neroli . .	10	10	—	40 dp.	—	—	—	—	—	—	—
Oil of ylang-ylang .	2	1	—	—	—	—	—	—	—	—	—
Oil of lavender .	—	10	1	4	—	—	1·2	10	10	—	—
Oil of wintergreen	—	1	—	—	—	—	—	—	—	—	—
Oil of peppermint .	—	—	28 dp.	—	—	—	—	—	—	—	—
Oil of thyme . .	—	—	16 dp.	—	—	—	—	—	—	—	—
Oil of rose . .	—	—	4 dp.	—	—	—	—	—	—	—	—
Oil of melissa .	—	—	trace	trace	—	—	—	—	5	—	—
Oil of orange-peel .	—	—	—	—	—	—	—	40	—	30	26
Oil of petitgrain .	—	—	—	—	—	—	—	15	—	—	—
Acetic ether . .	10	10	—	—	—	—	—	—	—	—	—
Acetic acid, 30 per cent.	10	10	—	—	—	—	—	—	—	—	—
Orange-flower water (triple) .	—	—	80	80	—	—	—	500	800	—	—
Rose-water (trip.) .	—	—	—	—	—	—	—	500	800	—	—

XX

Ol. rosmar. ang. . . ♏xx.
Ol. bergamot. . . ʒj.
Ol. limonis . . . ʒvj.
Ol. lavand. ang. . . ʒij.
Ol. caryoph. . . . ♏x.
Ol. neroli (Bigarade) petal. . . . ♏xx.
Ol. rosæ virgin. . . ♏xxiv.
Ol. cedrat. . . . ʒvj.
Spt. rectificat. . . ʒlxiv.

M.

XXI

Eau de Cologne oil . . ʒij.
Rectified spirit . . Ov.
Essence of civet . . ʒiss.
Water . . . . Ovij.
Light carbonate of magnesium . . . ʒss.

Mix and filter.

XXII

American Style

Oil of bergamot . . ʒiv.
Oil of asarum canadense . ʒij.
Oil of cloves . . . ʒij.
Oil of lavender . . ʒij.
Oil of lemon . . . ʒij.
Oil of rose-geranium . ʒss.
Oil of rosemary . . ʒj.
Oil of vetivert . . . ʒiij.
Oil of sandalwood . . ʒij.
Rectified spirit . Cong. iij.
Water . . . Cong. ij.

Mix in the above order.

NOTE.—Oil of asarum canadense is little known in Great Britain, but is much used in the United States by expert perfumers, who obtain with it the 'rounding' influence of patchouli without its objectionable persistence.

Extra Toilet Cologne

Ol. bergamottæ	ʒvj.
Ol. limonis	ʒvj.
Ol. neroli (Fries)	ʒij.
Ol. origani	ɱxx.
Ol. rosmarini	ʒiss.
Ol. aurant. dulc.	ɱXL.
Ol. caryophylli	ɱxx.
Ol. santal. flav.	ɱv.
Ol. lavandulæ	ɱx.
Ol. cassiæ cort.	ɱx.
Moschi artifact.	ʒij.
Aq. destillatæ	℥iv.
S.V.R. ad	℥xcvj.

Let stand for a week, shaking occasionally.

Fabæ tonkæ contus.	ʒiv.
Pulv. sem. angelicæ	℥ij.
Aq. bullientis	℥xxxij.

Infuse four hours or more and add to above; let stand one month. Every seven days syphon off the oils that float, rub them up with powdered pumice to form a thin cream, and mix in again. Shake once daily.

Eau de Cologne Oil

Oil of bergamot	℥viij.
Oil of lemon	℥ij.
Oil of lemongrass	℥j.
Oil of lavender	℥iv.
Oil of cloves	ʒij.
Rectified spirit	℥iv.

Mix.

Lily of the Valley Eau de Cologne

Maiglöckchen or Muguet

I

Oil of bergamot	ʒiv.
Oil of orange-flowers	ɱXLV.
Oil of lemon	ʒiv.
Oil of lavender	ɱxv.
Oil of rosemary	ɱxv.
Oil of ylang-ylang	ɱxv.
Oil of melissa	ɱv.
Rose-water (triple)	℥iij.
Orange-flower water (trip.)	℥iij.
Rectified spirit	Oij. ℥vj.
Ess. lily of the valley	ʒvj.

II

Oil of linaloe	ʒiiss.
Oil of bergamot	ʒss.
Oil of rose-geranium	ɱXLV.
Essence of musk	ɱlxxv.
Jasmine extrait	℥xvj.
Rectified spirit	℥xlviij.

Mix.

Eau Athenienne

Oil of rose-geranium	ʒj.
Oil of cloves	ɱlxxv.
Oil of bergamot	ʒiiss.
Tincture of Tonka bean	ʒv.
Essence of vanilla	℥ij.
Rectified spirit	℥xxiv.

Mix.

Eau de Bretfeld

Oil of neroli	gtt. xxx.
Otto of rose	gtt. xx.
Oil of lavender	ʒss.
Oil of cloves	ʒij.
Oil of bergamot	℥iiss.
Oil of lemon	ʒv.
Musk	gr. v.
Vanilla	Ɔiv.
Spirit	℥xxxij.

Macerate for a month and filter.

Eau d' Ypres

Oil of bergamot	ʒiij.
Oil of lemon	ʒj.
Oil of neroli	ʒj.
Oil of sweet orange	ɱxxv.
Oil of rosemary	ɱxxj.
Orange-flower water (trip.)	℥vj.
Rectified spirit	℥xxiv.

Mix, and after a fortnight filter.

Eau de Salvia

Oil of sage	ʒiiiss.
Oil of lemon	ʒiss.
Rectified spirit	℥viij.
Distilled water to	Oij.

Dissolve the oils in the spirit; pour the solution into 32 oz. of water containing ½ oz. of French chalk, shake, and filter bright.

Eau de Lisbonne

Oil of sweet orange	ʒss.
Oil of lemon	ʒij.
Otto of rose	♏xx.
Water	ʒiij.
Spirit to	Oj.

Mix, and filter after ten days.

Eau de Portugal

Oil of lemon	ʒivss.
Oil of bergamot	ʒij.
Oil of sweet orange	ʒj.
Otto of rose	ʒss.
Spirit	Oij.

Dissolve.

Florida-water

This perfume holds the place in the United States that lavender-water does in England. It is native of the soil, and has a distinctiveness all its own. It is not unlike a combination of lavender-water and Eau de Cologne, as the first formula especially shows. This is a formula which is used by a Californian house who have a large sale for the product. The other formulas provide pleasant variations.

I

Ol. lavand.	ʒss.
Ol. bergamot.	ʒj.
Ol. cassiæ	ʒj.
Ol. caryophylli	ʒss.
Ol. neroli	ʒss.
Ess. moschi	ʒss.
Spt. rectificat.	ʒlxiv.
Aq. cinnamom. ad	Oiv.

Mix in the above order.

II

Ol. bergamot.	ʒj.
Ol. aurant. cort.	ʒss.
Ol. lavand.	ʒiij.
Ol. caryophylli	ʒiss.
Ol. cinnamomi	♏xv.
Tr. iridis rad.	ʒj.
Ess. bals. peruv.	ʒss.
Spt. rectificat.	ʒxxx.

M.

III

Ol. lavand.	ʒij.
Ol. limonis	ʒij.
Ol. bergamot.	ʒij.
Ol. neroli	ʒj.
Ol. melissæ	ʒss.
Ol. rosæ virg.	♏x.
Spt. rectificat.	ʒxxxij.

M.

IV

Ol. bergamot.	ʒx.
Ol. limonis	ʒvj.
Ol. lavand.	ʒj.
Ol. aurant. corticis	ʒss.
Ol. caryophylli	ʒj.
Ol. cinnamomi	ʒj.
Ol. neroli	ʒj.
Aq. rosæ tripl.	Oij.
Spt. rectificat.	Cong. j.

M.

Melissa-water

(Spiritus Melissæ Co.)

Fol. melissæ	ʒxiv.
Cort. limonis	ʒiss.
Sem. myristicæ	ʒvj.
Cort. cinnamomi	ʒiv.
Caryophylli	ʒij.
Spt. rectificat.	ʒxxiij.

Bruise the solids, mix with the spirit, and after twenty-four hours' maceration distil 25 oz. with steam.

Violet-water

This perfume, which is of American origin, should have a pale greenish tint, but darker than violet

extrait. Extract. cannabis indicæ makes a nice colour.

I

Violet extrait	ʒij.
Cassie extrait	℥vj.
Spirit of rose	℥vj.
Spirit to	ʒxvj.

Mix.

II

Violet extrait	ʒij.
Cassie extrait	ʒj.
Spirit of rose	ʒss.
Tincture of orris	ʒss.
Green colouring	a sufficiency
Spirit to	Oj.

Mix.

III

Artificial violet	ʒiij.
Artificial jasmin	ʒj.
Concrete orris oil	℈j.
Oil of bitter almonds	mij.
White heliotropin	℈iv.
Artificial musk	ʒj.
Deodorised alcohol	Ovij. ʒiv.

Dissolve and add

Powdered orris	ʒiv.

Macerate for two days; then add

Distilled water	ʒxvj.

Filter after seven days and colour green.

SACHETS AND SOLID PERFUMES

The popularity of sachets is comparatively modern, but the pot-pourri jar is very old. The form of the perfumes is similar, but their uses are quite different, and the composition also. What is popularly known as pot-pourri is a mixture of coarsely powdered aromatic drugs and resins and dried odorous leaves, especially rose-petals. The pot-pourri plays to the flowers the part which musk and civet play to volatile oils in liquid perfumes—it fixes and blends the perfume.

The sachet is a distinct thing. It is wanted for its individuality, to place in some handkerchief-box, drawer, or dress-cupboard, and it is essential that it must be elegant in material and get-up. Custom compels us to have it in fairly fine powder, the basis powdered orris by preference, although rice-flour is, on the whole, as good and cheaper.

Solid Perfumes are composed of solid paraffin, wherewith the essential oils of any particular bouquet have been blended while liquid, in the proportion of ½ to 1 dr. of the perfume to 1 oz. of paraffin. Melt the paraffin (a tenth of kaolin may be added) on a water-bath, and allow to cool without stirring and without removing from the water-bath; when the 'melt' becomes creamy, stir in the perfumes and kaolin (if any), and pour the mass to the depth of ⅛ inch to ¼ inch into a tin

previously brushed with suppository-mould soap solution, or pour into individual tins. When the mass sets, score the surface to the size of cakes desired. The following are formulas suited for putting up as specialities with fancy names :—

I

Paraffin	ʒiv.
Oil of lavender	ʒij.
Oil of bergamot	ʒij.
Oil of cloves	ʒj.
Oil of rose-geranium	ʒss.
Vanillin	gr. viij.
Almond oil	ʒj.

Triturate the vanillin with the almond oil, add the essential oils, and shake well before adding to the paraffin.

II

Paraffin	ʒiv.
Oil of linaloe	ʒij.
Heliotropin	ʒss.
Oil of bergamot	ʒss.
Oil of lemon	ʒss.
Almond oil	ʒj.

Mix as above.

III

Paraffin	ʒviij.
Oil of bergamot	ʒij.
Oil of neroli	ʒj.
Oil of rose-geranium	ʒj.
Oil of lavender	ʒj.
Oil of cloves	ɱvj.
Heliotropin	gr. viij.
Almond oil	ʒj.

Mix as above.

IV

Paraffin	ʒiv.
Oil of ylang-ylang	ʒij.
Oil of cloves	ʒj.
Oil of sandalwood	ʒss.
Coumarin	℈j.
Essence of musk	ʒss.
Almond oil	ʒj.

Mix as above.

An easier way of making solid perfumes was introduced in 1896—viz., the formation of medallions from a plaster-of-Paris basis. Thus, for the production of a Violette de Parme cake or medallion, mix ionone ʒj., oil of neroli ɱx., and otto of rose ɱvj. with 10 oz. of plaster of Paris and sufficient aniline violet to colour ; add a drachm of common salt, and make into a cream with water. Cast into moulds quickly, and remove when set. The synthetic perfumes already described are particularly suitable for making these cakes. Use appropriate aniline dyes for colouring the mass : these may be dissolved in the water employed for making the plaster into a paste.

Another kind of solid perfume is made by massing any sachet powder with tragacanth mucilage and drying it at a heat not exceeding 80° F. There is little difficulty for a pill-builder in producing a variety of perfumes of this class, if he apply his skill to the massing of odorous bodies.

Peau d'Espagne, or Spanish Leather, is another perfume of the solid type which is sometimes wanted, and is, according to Askinson, prepared as follows :—

Benzoin	ʒviij.
Oil of bergamot	ʒvj.
Oil of lemon	ʒvj.
Oil of lemongrass	ʒvj.
Oil of lavender	ʒvj.
Oil of nutmeg	ʒiiss.
Oil of clove	ʒiiss.
Oil of neroli	ʒiss.
Oil of rose	ʒiss.
Oil of santal	ʒiss.
Tincture of Tonka	ʒvj.
Oil of cinnamon	ʒiiss.
Rectified spirit	ʒxxxij.

Make a tincture and filter. Take a square piece of chamois leather and leave it for three or four days in this tincture. At the end of the time remove the leather from the liquid, let it drain, spread it on a glass plate, and when dry coat it on the rough side, by means of a brush, with a paste prepared in a mortar from the following ingredients :—

Benzoic acid, sublimed	ʒiiss.
Musk	gr. xv.
Civet	gr. xv.
Gum acacia	ʒj.
Glycerine	ʒvj.
Water	ʒj. ʒvj.

The leather is then folded in the centre, smoothed with a paper-knife, put under a weight, and allowed to dry. The dried leather forms the so-called perfume-skin, which retains its fine odour for years.

Instead of the above alcoholic liquid any desired alcoholic perfume may be used : especially suitable are those containing oils of lemongrass, lavender, and rose, since they are not very volatile, and when combined with musk and civet remain fragrant for a long time. A sufficiently large piece of perfume-skin, inserted in a desk-pad or placed among the paper, will make the latter very fragrant. Spanish skin is chiefly used for this purpose, as well as for work, glove, and handkerchief boxes, &c. It is generally enclosed in a heavy silk cover. Other perfumes may be employed similarly, but it will be seen from the composition of the above that the perfume is one of the most lasting.

Spanish Paste.—The second part of the preceding is a good working formula. The following is another :—

Powdered ambergris	ʒvj.
Powdered benzoin	ʒiss.
Powdered musk	ʒvj.
Powdered vanilla	ʒvj.
Powdered orris-root	ʒvj.
Powdered cinnamon	ʒvj.
Oil of bergamot	ʒiss.
Oil of rose (floral)	ʒvj.
Gum acacia	ʒiss.
Glycerine	ʒiss.

Mix the whole, and add water drop by drop until a doughy mass is obtained. This paste, divided into pieces about the size of a hazel-nut, is used for perfuming jewellery, scent-boxes, fine leather goods, belts, &c.

Sachet-powders.—The ingredients should be a mixture of coarse and fine powder. Mix all the solids together in a mill or mortar, sprinkle the liquids over the powder, and pass several times through a No. 6 sieve :—

Heliotrope

I

Orris-root, in coarse powder	ʒvj.
Vanilla, in coarse powder	ʒij.
Musk	gr. iij.
Otto of rose	ɱj.
Essential oil of almonds	ɱj.

Mix.

II

Powdered orris-root	ʒxvj.
Powdered vanilla	ʒiv.
Powdered benzoin	ʒj.
Musk	gr. v.
Civet	gr. xv.
Essential oil of almonds	ɱx.
Otto of rose	ɱx.

Mix.

III

Powdered orris-root	ʒviij.
Coumarin	gr. xv.
Vanillin	gr. x.
Musk	gr. v.
Essential oil of almonds	ɱj.
Otto of rose	ɱj.
Spirit	ʒij.

Mix.

Ess. Bouquet

I

Powdered orris-root	ʒxvj.
Grain musk	ʒj.
Otto of rose	ʒj.
Oil of bergamot	ʒiij.
Oil of lemon	ɱxl.

Mix.

II

Powdered orris-root	lb. ij.
Powdered sandalwood	lb. ij.
Powdered orange-peel (sweet)	lb. ij.
Artificial musk	gr. j.
Coumarin	gr. ij.
Vanillin	gr. ij.
Otto of rose	ʒiss.
Oil of bergamot	ʒij.
Oil of ylang-ylang	ɱxx.
Oil of neroli	ɱxx.
Oil of rose-geranium	ɱxv.
Oil of cinnamon	ɱv.
Essential oil of almonds	ɱv.
Jasmine extrait	ʒij.

Mix.

VI

Powdered orris-root	lb. iv.
Ground cassie	lb. j.
Rose-petals	lb. j.
Ground vanilla	ʒiij.
Oil of bergamot	ʒj.
Oil of lemon	ʒj.
Essence of musk	ʒij.
Essence of ambergris	ʒss.
Oil of rose-geranium	ʒj.

Mix.

Frangipanni

I

Powdered orris-root	ʒxvj.
Powdered Tonka bean	ʒiv.
Musk	gr. x.
Civet	ʒss.
Otto of rose	♏x.
Oil of sandalwood	♏x.
Oil of neroli	♏x.

Mix.

II

Powdered orris-root	ʒxvj.
Powdered sweet-orange peel	ʒxvj.
Powdered sassafras	ʒiij.
Coumarin	gr. j.
Otto of rose	♏xx.
Oil of sandalwood	♏iij.
Oil of rose-geranium	♏iij.
Essential oil of almonds	♏ij.
Essence of musk	ʒiss.
Essence of civet	ʒiss.
Jasmine extrait	ʒiss.

Mix.

III

Powdered orris-root	lb. iij.
Rasped sandalwood	ʒiv.
Ground vanilla	ʒiv.
Ground Tonka bean	ʒij.
Oil of neroli	ʒj.
Oil of rose-geranium	ʒj.
Oil of bergamot	ʒj.
Oil of sandalwood	♏xl.
Otto of rose	ʒss.
Oil of vetivert	♏x.
Essence of musk	ʒj.
Essence of civet	ʒss.

Mix.

Acacia or Cassie

Cassie-flowers	of each
Powdered orris-root	equal parts

Grind the flowers and mix with the orris.

Bouquet de Caroline

Powdered orris-root	lb. ij.
Grain musk	gr. x.
Oil of bergamot	ʒss.
Oil of lemon	ʒss.
Otto of rose	ʒss.

Mix.

Chypre

Powdered orris-root	lb. iss.
Rasped cedarwood	lb. j.
Rasped sandalwood	lb. j.
Vanilla (ground)	ʒiv.
Tonka bean (ground)	ʒij.
Essence of musk	ʒj.
Oil of rose-geranium	ʒss.
Otto of rose	♏xxv.
Oil of bergamot	♏xv.

Mix.

Millefleurs

I

Powdered orris-root	ʒxvj.
Grain musk	gr. v.
Civet	gr. x.
Otto of rose	♏xx.
Oil of neroli	♏xx.
Oil of cloves	ʒss.
Oil of bergamot	ʒj.

Mix.

II

Powdered orris-root	lb. ij.
Ground lavender-flowers	lb. j.
Ground cassie-flowers	lb. j.
Ground rose-flowers	lb. j.
Ground sandalwood	ʒviij.
Ground Tonka beans	ʒiv.
Ground benzoin	ʒiv.
Ground vanilla	ʒiij.
Ground cinnamon	ʒij.
Ground cloves	ʒij.
Essence of musk	ʒss.
Essence of civet	ʒss.
Oil of bergamot	ʒss.
Oil of rose-geranium	ʒss.
Oil of patchouli	♏x.

Mix.

Jockey Club

I

Powdered orris	ʒxvj.
Musk	gr. v.
Otto of rose	♏xl.
Oil of bergamot	ʒj.
Oil of sandalwood	ʒj.

Mix.

II

Powdered orris-root	ʒxij.
Ground sandalwood	ʒij.
Essence of musk	ʒss.
Oil of bergamot	ʒij.
Essence of civet	ʒij.
Otto of rose	♏viij.

Mix.

III

Sweet-orange peel, dried and ground	lb. iiss.
Powdered orris-root	lb. iss.
Ground rose-petals	lb. iss.
Siam benzoin	ʒiv.
Ground sandalwood	ʒij.
Cloves	ʒj.
Coumarin	gr. x.
Musk	gr. j.
Civet	gr. j.
Otto of rose	ʒj.
Oil of bergamot	ʒiss.
Oil of rose-geranium	ʒss.
Oil of neroli	ʒss.
Oil of cinnamon	♏x.
Oil of bitter almonds	♏x.
Oil of ylang-ylang	♏x.
Jasmine extrait	ʒiv.

Mix.

Lign Aloe

Powdered orris-root	lb. iiiss.
Ground rose-leaves	lb. j.
Ground sandalwood	ʒviij.
Ground vanilla	ʒiv.
Oil of linaloe	ʒj.
Essence of civet	ʒj.
Essence of musk	ʒss.
Oil of rose-geranium	♏xl.
Otto of rose	♏xx.

Mix

Lavender

I

Lavender-flowers	ʒxvj.
Dried thyme	ʒj.
Dried spearmint	ʒj.
Powdered cloves	ʒss.
Powdered caraway	ʒss.
Oil of lavender	ʒij.

Mix.

II

Ground lavender-flowers	ʒxvj.
Ground benzoin	ʒj.
Oil of lavender	ʒss.
Essence of musk	ʒss.

Mix.

Maréchale

Powdered orris-root	lb. j.
Ground sandalwood	ʒviij.
Ground rose-petals	ʒiv.
Ground cloves	ʒiv.
Essence of musk	ʒj.
Oil of bergamot	ʒj.
Oil of rose-geranium	ʒj.
Oil of vetivert	ʒj.

Mix.

Mousselaine

Powdered orris-root	lb. ij.
Ground rose-flowers	ʒviij.
Ground cassie-flowers	ʒviij.
Ground sandalwood	ʒviij.
Ground benzoin	ʒij.
Essence of musk	ʒij.
Oil of vetivert	ʒj.
Oil of rose-geranium	♏xxxv.
Oil of neroli	♏v.

Mix.

Musk

I

Powdered orris-root	lb. iiss.
Grain musk	ʒss.
Otto of rose	ʒj.

Mix.

II

Rice-flour	ʒxij.
Artificial musk	gr. x.

Stain the flour with a few drops of solution of aniline yellow and triturate the musk intimately with it.

New-mown Hay

I

Bouquet de Caroline sachet	ʒviij.
Verbena sachet (No. 1)	ʒiv.
Violet (No. 1)	ʒiv.

Mix.

II

Powdered orris-root	lb. ij.
Ground Tonka beans	ʒiv.
Ground vanilla	ʒij.
Essence of musk	ʒvj.
Oil of rose-geranium	ʒj.
Oil of bergamot	ʒss.
Otto of rose	ɱxv.
Oil of almonds	ɱv.

Mix.

Opoponax

Powdered orris-root	lb. iij.
Ground rose-petals	lb. j.
Ground cassie-petals	lb. j.
Ground Tonka beans	ʒiv.
Ground vanilla	ʒiij.
Ground musk-pods (or essence of musk)	ʒj.
Essence of civet	ʒss.
Oil of bergamot	ʒij.
Oil of rose-geranium	ʒj.
Oil of citron	ʒss.
Oil of patchouli	ʒss.
Oil of citronella	ɱxv.
Otto of rose	ɱv.

Mix.

Patchouli

Powdered orris-root	ʒxvj.
Powdered patchouli-leaves	ʒviij.
Otto of rose (or oil of rose-geranium)	ʒss.
Oil of patchouli	ʒj.

Mix.

Rose-geranium

Powdered orris-root	lb. ij.
Oil of rose-geranium	ʒss.
Otto of rose	ɱx.
Essence of musk	ʒss.

Mix.

Rondeletia

Powdered orris-root	lb. iij.
Ground lavender-flowers	lb. iss.
Ground cloves	ʒss.
Essence of musk	ʒj.
Essence of ambergris	ʒj.
Oil of bergamot	ʒij.
Oil of English lavender	ʒij.
Oil of cloves	ʒij.
Oil of rose-geranium	ʒss.
Otto of rose	ɱxx.

Mix.

Rose

I

Ground rose-petals	lb. iss.
Powdered orris-root	ʒviij.
Ground sandalwood	ʒiv.
Ground patchouli-leaves	ʒij.
Essence of civet	ʒss.
Oil of rose-geranium	ʒss.
Otto of rose	ɱxx.

Mix.

II

Sem. coriand.	ʒviij.
Pulv. pimentæ	ʒiv.
Pulv. caryoph.	ʒiv.
Pulv. benzoin.	ʒiv.
Pulv. iridis	ʒiv.
Moschi	gr. ij.
Sacch. demerar.	ʒviij.
Styracis	ʒij.
Ol. bergam.	ʒvj.

M.

White Rose

Powdered orris-root	ʒxvj.
Rice-flour	ʒviij.
Otto of rose	ʒij.
Oil of patchouli	ɱxv.

Mix.

Red Rose

Powdered orris-root	ʒxvj.
Rasped sandalwood	ʒviij.
Rasped cedarwood	ʒviij.
Musk	gr. v.
Otto of rose	ʒj.

Colour the orris-powder with solution of carmine before mixing with the other ingredients.

Sweet Briar

Powdered orris-root	lb. iv.
Ground sandalwood	lb. j.
Essence of ambergris	ʒj.
Essence of musk	ʒss.
Oil of lemon	ʒj.
Oil of lemongrass	ʒj.
Oil of neroli	ʒj.
Oil of bergamot	ɱxl.
Oil of rose-geranium	ʒss.
Otto of rose	ʒss.

Mix.

Verbena

I

Powdered orris-root	lb. ij.
Civet	gr. x.
Oil of lemongrass	ʒj.
Otto of rose	ɱxx.

Mix.

II

Powdered orris-root	lb. iij.
Essence of musk	ʒss.
Oil of lemongrass	ʒiij.
Oil of bergamot	ʒij.
Oil of rose-geranium	ʒss.

Mix.

Violet

I

Powdered orris-root	lb. ij.
Powdered benzoin	ʒiv.
Cassie extrait	ʒj.
Otto of rose	ɱx.
Essential oil of almonds	ɱx.

Mix.

II

Powdered orris-root	lb. iij.
Essence of musk	ʒj.
Oil of bergamot	ʒss.
Essential oil of almonds	ɱxx.
Otto of rose	ɱxx.

Mix.

Violette de Parme

Ionone	ʒij.
Jasmine extrait	ʒiij.
Orris-powder	ʒiv.
Rice-flour	ʒxij.

Mix and tint with violet aniline.

West-end

Powdered orris-root	lb. j.
Grain-musk	gr. x.
Civet	gr. xx.
Otto of rose	ɱxx.
Oil of bergamot	ɱxl.

Mix.

Ylang-ylang

I

Powdered orris	lb. j.
Powdered benzoin	ʒss.
Civet	gr. v.
Oil of ylang-ylang	ɱxx.
Oil of bitter almonds	ɱiij.

Mix.

II

Powdered orris-root	lb. iij.
Ground cassie-flowers	lb. j.
Rose-flowers	lb. j.
Ground pimento	ʒiv.
Ground Tonka bean	ʒij.
Ground vanilla	ʒij.
Ground benzoin	ʒj.
Essence of musk	ʒj.
Essence of civet	ʒss.
Oil of bergamot	ʒij.
Oil of ylang-ylang	ʒij.
Oil of pimento	ʒj.
Oil of rose-geranium	ʒj.
Otto of rose	ɱxx.

Mix.

A simple way to make sachet-powder extemporaneously is to take a quantity of a basis and add to it liquid perfume in the proportion of a drachm to the ounce. The resulting compound is suited for ordinary retail sale, and if a more permanent article is desired, the ingredients of any perfume

minus spirit may also be mixed with the basis. The following are suitable bases :—

I	
Bran	ʒvij.
Powdered orris-root	ʒj.
Mix.	

II	
Ground rice	ʒiv.
Powdered orris-root	ʒiv.–ʒxij.
Mix.	

The latter may be coloured with a few drops of a proof-spirit solution of an aniline dye.

In compounding sachets the whole of the liquid ingredients should be mixed and triturated for five minutes with twelve times their bulk of orris-root or other non-resinous basis. The resins, if any, are in the formula, should be separately mixed with a portion of the fibrous basis.

Pot-pourri.—In making pot-pourri the whole of the solids are to be coarsely powdered, the liquids evenly sprinkled over the mixture, and then all well mixed together.

I	
Orris-root	ʒxvj.
Benzoin	ʒv.
Coriander	ʒiv.
Cinnamon	ʒj.
Cloves	ʒj.
Pimento	ʒj.
Tonquin bean	ʒss.
Ess. bouquet	ʒss.

II	
Lavender-flowers	lb. j.
Rose-petals	lb. j.
Orris-root	lb. j.
Table-salt	ʒviij.
Cloves	ʒiv.
Cinnamon	ʒiv.
Benzoin	ʒiv.
Pimento	ʒiv.
Vanilla	ʒiij.
Musk-pod	ʒj.
English oil of lavender	ʒj.
Oil of sandalwood	ʒj.
Oil of rose-geranium	ʒj.
Oil of bergamot	ʒij.
Oil of lemon	ʒij.
Essence of ambergris	ʒss.
Otto of rose	mx.

Grind the solids together to coarse powder, and with the mixture intimately incorporate the oils.

III	
Rose-petals	ʒviij.
Lavender-flowers	ʒiv.
Orris-root	ʒij.
Vanilla	ʒij.
Cloves	ʒij.
Storax	ʒss.
Siam benzoin	ʒj.
Ambergris	gr. xx.
Musk	gr. iv.
Common salt	ʒij.
Oil of lemon	ʒj.
Oil of vetivert	ʒss.

IV	
Vanilla	ʒj.
Orris-root	ʒj.
Cloves	ʒj.
Cinnamon-bark	ʒj.
Oil of lavender	mx.
Oil of neroli	mx.
Coriander	ʒiv.
Orris-root	ʒiv.
Calamus	ʒiv.
Rose-petals	ʒiv.
Lavender-flowers	ʒij.
Mace	ʒss.
Cinnamon	ʒss.
Cloves	ʒij.
Essence of musk	ʒss.
Common salt	ʒij.

For mixing at home the plan to adopt is as follows :— Take a 2-gallon jar and fill it with rose-petals, orange-blossoms, and lavender-flowers, sprinkle them well with salt, and then disperse through the contents 4 oz. of any pot-pourri which does not contain the dried flowers. If lavender and orange flowers are not obtainable, the powder should contain oils of neroli and lavender.

VI

Sem. coriand.	ʒxvj.
Pulv. benzoin.	ʒviij.
Pulv. iridis	ʒviij.
Pulv. pimentæ	ʒij.
Pulv. cinnam.	ʒj.
Pulv. caryoph.	ʒss.
Ol. bergam.	ʒij.
Ol. lavand.	ʒij.
Moschi	gr. ij.
Ess. bouquet.	ʒij.

M.

VII

Pimento	ʒij.
Cinnamon	ʒij.
Essence of musk	ɱxij.
Essence of ambergris	ɱxij.
Oil of lavender	ɱxij.

Mix.

VIII

Vanilla	ʒj.
Orris-root	ʒj.
Cloves	ʒj.
Cinnamon	ʒj.

Mix.

IX

(Lord Plymouth's Pot-pourri)

Benzoin. siamensis contus.	ʒviij.
Pulv. iridis	ʒviij.
Pulv. styracis	ʒviij.
Pulv. rad. angelicæ	ʒviij.
Gran. moschi	℈j.
Fabæ tonkæ	No. iv.
Macidis	ʒss.
Caryophyll.	ʒss.
Cort. cinnam. contus.	ʒss.

Mix all these when they have been bruised or powdered and add

Ol. lavand. ang.	ʒj.
Otto rosæ	ʒj.
Flor. rosæ	ʒiv.
Flor. lavandulæ	ʒiv.

Again mix.

X

(Violet Odour)

Black-currant leaves	ʒvij.
Cinnamon	ʒviij.
Rose-leaves	ʒviij.
Powdered orris-root	ʒxviij.
Powdered benzoin	ʒiv.
Essential oil of almonds	ʒiij.
Grain musk	ʒj.

Mix.

XI

Gum benzoin	ʒij.
Orris-root	ʒj.
Cloves	ʒj.
Storax	ʒss.
Cinnamon	ʒij.

Grind together and add

Musk	ʒss.
Coarse and dry salt	lb. ij.
Oil of lavender	ɱxx.

Mix.

XII

Cinnamon	ʒss.
Cloves	ʒss.
Mace	ʒss.
Orris-root	ʒiv.
Oil of lavender	ɱXL.
Oil of lemongrass	ɱXL.
Oil of lemon	ɱXL.
Oil of bergamot	ɱXL.

Mix.

FUMIGATING-PERFUMES

These are used for quickly putting down bad odours in sick-rooms and other apartments. As a rule, they are not very nice, being rather balsamic than flowery; still, they are decidedly antiseptic, and fulfil their purpose admirably.

Incense-powders

I

Gum thus	ʒiij.
Benzoin	ʒij.
Amber	ʒiij.
Lavender-flowers	ʒj.

Powder the resins coarsely and mix with the flowers.

II

Benzoin	ʒvj.
Gum thus	ʒvj.
Storax	ʒviij.
Olibanum	ʒiv.
Cascarilla	ʒxij.
Musk	℈j.

Mix as above.

(Piesse)

Sandalwood in powder	lb. j.
Cascarilla, in powder	ʒviij.
Benzoin, in powder	ʒviij.
Vetivert	ʒij.
Nitrate of potash	ʒij.
Grain musk	ʒss.

Mix thoroughly and sift.

NOTE.—The best way to use these incense-powders is to sprinkle a little upon a hot shovel, or, better, upon a live coal placed on a shovel and held in mid-air. Nos. I. and II. may have a twelfth of their weight of nitre added to them as in Piesse's formula.

Ecclesiastical Incense.—The formula for incense used in the Jewish Church in the time of Moses is thus given in Exodus xxx. 34–36 :—

Take unto thee sweet spices, stacte, and onycha, and galbanum, *these* sweet spices, with pure frankincense : of each shall there be a like *weight*:

And thou shalt make it a perfume, a confection after the art of the apothecary, tempered together, pure *and* holy :

And thou shalt beat *some* of it very small, and put of it before the testimony in the tabernacle of the congregation.

All these constituents except onycha are known ; but there is considerable doubt about what onycha is. A lengthy correspondence in *The Chemist and Druggist*, August 26, 1899, *et seq.*, showed that in the Hebrew it seems almost conclusive that onycha denotes the crustaceous covering of the shells of certain species of a univalve shellfish found in the Red Sea and Indian Sea ; but there are several reasons for supposing that good almondy benzoin was the more likely constituent. Mr. E. M. Holmes mentioned that a Jewish recipe for the incense used before the destruction of the Temple (incense being not now used by the Jews) included, as chief ingredients, balm,

onycha, galbanum, frankincense, and, in lesser quantities, myrrh, cassia, spikenard, saffron, costus, canella, cinnamon, soap of Carsina, and 'a herb fitted to raise a fume.' The onycha was to be refined by means of the soap of Carsina, and rendered more powerful by digestion in wine of Cyprus. It is, therefore, quite apparent that the exact composition of the Levitical incense is beyond our ken, but the following formulas are used by the clergy of Roman and Anglican churches :—

I

Olibanum, in small tears .	ʒxvj.
Benzoin, coarsely powdered	ʒiss.
Cascarilla, coarsely powdered . . .	ʒj.
Storax in coarse powder .	ʒss.

Mix.

II

Olibanum . . .	ʒxx
Benzoin . . .	ʒvj.
Cascarilla . . .	ʒv.
Cassia-bark . . .	ʒij.
Cloves	ʒij.

Coarsely powder and mix.

In the Greek Church and Catholic Apostolic Church the finest Siam benzoin is used ; in fact, the pick of the Siam benzoin that comes into the London market goes to Russia.

Paper.—Select good white blotting-paper, or other unsized paper, and cut each demy sheet lengthways into three equal pieces. Make a solution of 1 oz. of potassium nitrate in 12 oz. of boiling water ; place this solution in a large plate, and draw each strip of paper over the solution, so as to saturate it. Then dry by hanging up. The dried paper is to be saturated in a similar manner, or by spraying, with either of the following solutions :—

I

Siam benzoin . . .	ʒj.
Storax	ʒiij.
Olibanum . . .	℈ij.
Mastic	℈ij.
Cascarilla . . .	ʒij.
Vanilla	ʒj.
Rectified spirit . .	ʒviij.

Bruise the solids and macerate in the spirit five days, filter, and add

Oil of cinnamon . .	♏viij.
Oil of cloves . . .	♏viij.
Oil of bergamot . .	♏v.
Oil of neroli . . .	♏v.

Mix.

II

Benzoin	ʒiss.
Sandalwood . . .	ʒj.
Spirit	ʒviij.

Macerate as No. 1. and add

Essence of vetivert . .	ʒiij.
Oil of lemongrass . .	♏XL.

Mix.

After the paper is dry, cut it into suitable-sized pieces to go into a commercial envelope—ten pieces for 6*d*.

As 'Armenian paper' it is sold in yellowish-brown strips about ½ inch wide, made from white demy, the solution being coloured with tr. benzoin. co.

Ribbon.—Take ½-inch cotton tape and saturate it with nitre in the same manner as the paper just described; when dry saturate with the following tincture :—

Benzoin	℥j.
Orris-root	℥j.
Myrrh	ʒij.
Tolu balsam	ʒij.
Musk	gr. x.
Rectified spirit	℥x.

Macerate for a week, filter, and add 10 minims of otto of rose.

Another good formula, which may also be used for preparing fumigating-paper, is

Olibanum	℥ij.
Storax	℥j.
Benzoin	ʒvj.
Peruvian balsam	℥ss.
Tolu balsam	ʒiij.
Rectified spirit	℥x.

Macerate ten days and filter.

Pastilles.—The following are good formulas; the first is said to give a product closely resembling Piesse & Lubin's pastilles; the second is from the French Codex; and the third is one highly spoken of by a competent pharmacist :—

I

Cascarilla	℥j.
Benzoin	℥j.
Camphor	ʒj.
Nitre	ʒj.
Charcoal	℥ij.
Ambergris	gr. x.
Musk	gr. x.
Mucilage of tragacanth	a sufficiency

Powder the ingredients, mix, and make into a stiff paste with the mucilage. Divide into cones and dry.

II

Vegetable charcoal	ʒvj.
Benzoin	℥j.
Nitrate of potash	℥ss.
Tolu balsam	ʒij.
Sandalwood	ʒij.
Mucilage of tragacanth	a sufficiency

Reduce the solids to fine powder, mix, and make into a stiff paste with the mucilage. Divide this into cones 25 gr. in weight and dry at a gentle heat.

III

Powdered willow-charcoal	ʒviij.
Benzoic acid	ʒvj.
Nitrate of potash	ʒvj.
Oil of thyme	ʒss.
Oil of sandalwood	ʒss.
Oil of caraway	ʒss.
Oil of cloves	ʒss.
Oil of lavender	ʒss.
Oil of rose	ʒss.
Rose-water	℥x.

Proceed as in No. 1., but this recipe is much the better for the addition of 20 gr. of powdered tragacanth.

Nos. II. and III. pastilles are good for burning in apartments to keep away insects.

PERFUMING HALLS AND THEATRES

When the play of 'Sweet Lavender' was in vogue provincial chemists were occasionally called upon to perfume the theatres with lavender-water. It was a herculean task to undertake, and there were not many who knew exactly how to go about it. The fashion is still kept up in respect to other perfumes as a means of advertising them; and the cinematograph craze, with consequent crowds of people crammed into confined spaces, has made a fresh demand for this method of overcoming bad odours.

For the 'Sweet Lavender' business such a perfume as the following may be used, it being cheaper and more penetrating than the delicate 'triple-distilled old English' stuff, which has not sentiment to back it up, as a theatre-perfume may be said to have :—

Ol. lavand. exot.	ʒiv.
Ol. bergamot.	ʒij.
Ol. menth. pip.	♏x.
Ol. caryoph.	ʒj.
Acid. benzoic.	ʒj.
Spt. rectificat. ad	Oj.

The best perfumes for cinemas are those with pine odours—'Sanitas' with a dash of the above is excellent. Spraying-syringes are obtainable which diffuse the perfume as a cloud.

For perfuming ballrooms the Ballroom-floor Polish (a mixture of powdered boric acid 6 parts with hard paraffin 1 part) should have lavender oil or similar perfume added to it in the course of manufacture, as this is a good form in which to diffuse perfume.

TO PERFUME PROGRAMMES

Sprinkle some of the perfume on a half-demy sheet of blotting-paper, allow excess of spirit to volatilise, and place at the bottom of an air-tight box of suitable size. On the paper place a layer of programmes, then another sheet of perfumed paper, more programmes, and so on. Close the box when full, and keep in a warm place, repeating the process if necessary.

Another plan is to mix the perfume with ground rice and

sprinkle it over the cards, put in a box layer by layer. In a short time the cards may be removed and dusted. Synthetic perfumes—*e.g.*, heliotropin—are now much used for scenting paper. The alcoholic solution is for this purpose sprayed on the inner surface of the box in which the paper is packed.

SYNTHETIC AND ARTIFICIAL PERFUMES

The last twenty-five years have shown steady and continuous progress in the discovery of methods of preparing synthetic and artificial perfumes. When they were introduced, severe attacks were made against them, on the ground that they were usually coarse and powerful, and not fit for the use of refined persons, with the result that two extreme schools arose, the opinions of each being apparently dominated by their interests—the French perfumery trade resisting synthetics for a considerable time, and the German manufacturers of synthetics trying to oust the natural perfumes with their factory-made products. To-day neither party survives, and a middle course now prevails. Progress in appreciation of the possibilities of and results with synthetic perfumes was inevitable when the chemistry of essential oils and other perfumes became clearer. Hence for the present edition of this work the annotations on perfume constituents, and the composition and properties of synthetics, have considerably extended.

In compounding perfumes with synthetic or artificial products it is important not to use too much of the synthetic. This is the cause of most failures. Whenever possible, use a synthetic and a natural perfume, the former to strengthen and accentuate the latter, the natural to round off the sharp edge of the artificial. Also guard specially against the employment of incompatible odours. The artistic perfumer finds that odours can usually be divided, like musical notes, into sharps and flats, and the presence of the two in one mixture is as a false chord in music.

The author desires to express his indebtedness to Mr. E. J. Parry, B.Sc., F.I.C., for assistance in extending and revising the following notes on synthetic perfumes.

Acetophenone, otherwise hypnone or phenyl-methyl-ketone, $C_6H_5COCH_3$, is a crystalline odorous substance which blends well with terpineol, coumarin, and heliotropin.

Amyl Acetate, or oil of pear, $C_5H_{11}C_2H_3O_2$, is the ester of iso-amyl alcohol, sp. gr. 0·876, and is much used as a flavouring agent as well as a solvent of resins.

Amyl Benzoate, an amber-coloured liquid, $C_5H_{11}C_7H_5O_2$, is used in perfumery as a 'fixer.'

Amyl Heptylate is an oil of fruity odour, recently introduced as a perfume component for giving subtle distinction to common odours.

Amyl Salicylate, a colourless or yellowish liquid, $C_5H_{11}C_7H_5O_3$, sp. gr. 1·050, soluble in alcohol, and having the odour of trefoil and orchid, differing from wintergreen. Used in compounding perfumes of the orchid odour.

Aubépine is anisic aldehyde, $C_6H_4(OCH_3)(CHO)$, a liquid of sp. gr. 1·127. The so-called crystalline aubépine is an impure mixture. The odour of anisic aldehyde is that of hawthorn, and it is a most useful adjunct to all perfumes having that type of bouquet. It blends well with the odours of the citrus family. *Crategine* is substantially anisic aldehyde. It is soluble in 8 volumes of 50-per-cent. alcohol and in all proportions of 90-per-cent. alcohol.

Benzaldehyde, C_6H_5COH, is almost identical with natural essential oil of almonds; sp. gr. 1·050, and soluble in alcohol. It is useful in *minute* traces for perfumes of the 'cherry-pie' or heliotrope type.

Benzyl Acetate, a sweet-smelling liquid, $C_6H_5CH_2C_2H_3O_2$, which is one of the principal constituents of jasmine and ylang-ylang oils. Sp. gr. 1·057, and soluble in alcohol.

Benzyl Alcohol, a liquid, $C_6H_5CH_2OH$, sp. gr. 1·043, occurring to a small extent in oils which contain its esters, and used in conjunction with the latter.

Benzyl Benzoate and Benzyl Cinnamate are crystalline substances, the former melting at 21° C., the latter at 39° C. Used as fixers. The benzoate occurs in commerce as a liquid owing, possibly, to a trace of impurity preventing crystallisation. It is an exceedingly good solvent for artificial musk.

Benzyl Butyrate enters into the composition of modified jasmine odours.

Benzyl Valerianate, in traces, occurs in some brands of artificial otto of rose.

Beta-Naphthol Ethyl Ether (Bromelia), $C_{10}H_7OC_2H_5$, is a crystalline body melting at 37° C. It is a perfume of the neroli type, as is the corresponding methyl ether, melting at 70° C.

Borneol or Borneo Camphor ($C_{10}H_{17}OH$) occurs in *Dryobalanops Camphora*, Gaert., the Barus or Borneo camphor tree, and is also produced artificially. It is chiefly of interest on account of its esters, but it is present in rosemary, lavender, and other essential oils; in fact, it is a widespread constituent of natural odours. Its structural isomeride, isoborneol, is an intermediate product in the manufacture of synthetic camphor.

Bornyl Acetate.—This body ($C_{10}H_{17}C_2H_3O_2$) is a constituent of coriander, pine-needle, rosemary, and many other oils, and is essential in reproducing any pine odour. The commercial crystalline product is a mixture of the dextrorotatory and lævorotatory acetates.

Bornyl Benzoate and Butyrate have been prepared arti-

ficially, but their existence in specific perfumes has not been proved.

Bornyl Formate.—This liquid ($C_{10}H_{17}CHO_2$) is a constituent of valerian oil, occurring in two forms, dextrorotatory, sp. gr. 1·017, and lævorotatory, sp. gr. 1·016 at 15° C.

Bornyl Isovalerianate, $C_{10}H_{17}OOCC_4H_9$, occurs naturally in Kesso root (Japanese valerian) and in valerian, and is prepared artificially. It is a colourless oil, of sp. gr. 0·954. It is more used as an antispasmodic than as a perfume.

Bornyl Propionate, a liquid, sp. gr. 0·979, resembling bornyl acetate in odorous character, with formula $C_{10}H_{17}OOCCH_2CH_3$.

Cinnamic Aldehyde—

$C_6H_5(CHCHCOH)$

—is the principal constituent of cinnamon and cassia oils. Sp. gr. 1·054.

Cinnamic Alcohol, or styrone, $C_6H_5(CHCHCH_2OH)$, is a sweet-smelling oil used in perfumes of the hyacinth type. Its methyl and ethyl esters are excellent fixers.

Cinnamyl Butyrate.—This is useful in sparing amounts for imparting a fruity bouquet to perfumes.

Cinnamyl Cinnamate (styracin) occurs in storax and balsams, and has a similar odour to benzyl cinnamate. The Propionate has a grape-like odour.

Citral, $C_{10}H_{16}O$, an aliphatic aldehyde first isolated by Bertram from the oil of *Backhousia citriodora*, but widely spread in nature —*e.g.*, it is the chief odorous constituent of lemon oil, which is valued by the amount of citral that it contains. The chief use of citral is for the manufacture of ionone (*q.v.*). Pure citral has sp. gr. 0·897 at 15° C.; when prepared from lemongrass oil it has sp. gr. 0·893.

Citronellol, $C_{10}H_{20}O$, is practically identical with rhodinol, which is a mixture of citronellol with a little geraniol. It is a constituent of otto of rose, and can be obtained by the reduction of citronellal, the alcohol. From the following sources it has the specific gravities indicated: (1) from barosma oil, 0·872, (2) from citronellal 0·856, (3) from citronella oil, 0·862, (4) from geranium oil, 0·862, (5) from otto of rose, 0·861. It also varies slightly in boiling-point, optical rotation, and refractive index according to its origin. The alkyl substitution-products of citronellol have modified rose odours, and are used to prepare ottos which imitate the perfumes of individual roses, such as the red rose, Malmaison, and Maréchal Niel.

Citronellyl Acetate, $C_{10}H_{19}C_2H_3O_2$, is a constituent of citronella and geranium oils, and is a colourless liquid of bergamot odour, sp. gr. 0·8928 at 17·5° C. (commercial, sp. gr. about 0·900). Used in making synthetic otto of rose.

Citronellyl Formate, $C_{10}H_{19}CHO_2$, is a liquid with bergamot and rose odour.

Civet. — Numerous artificial civets are obtainable. They all contain a foul-smelling nitrogenous compound of the indol or skatol type, and are used in the same way as natural civet, but in very minute quantities.

Coumarin, $C_9H_6O_2$, is the crystalline odorous principle of the Tonka bean. It is from fifty to seventy times stronger than the bean, and is a white crystalline solid, melting at 69° C. It is used in conjunction with heliotropin, vanillin, and benzoic aldehyde, and is an essential ingredient in perfumes of the new mown hay type. It requires a good fixer, as it volatilises very rapidly.

Cuminic Aldehyde is

$C_6H_4(CH[CH_3]_2)CHO$, and occurs naturally in boldo-leaves, cumin-seed, cassie-flower, cinnamon, myrrh oil, and some eucalypts. Sp. gr. 0·982.

Decyl Alcohol, whose formula is $CH_3(CH_2)_8CH_2OH$, is a constituent, in traces, of artificial otto of rose, and is much used in minute quantity as a modifier of odours.

Decyl Aldehyde—

$$CH_3(CH_2)_8CHO$$

—is a liquid which occurs in orange, rose, and other essential oils; sp. gr. 0·828. In minute quantities it is useful in reproducing cassie, neroli, orange, orris, and rose odours.

Diphenyl-methane, a crystalline synthetic, $C_6H_5CH_2C_6H_5$, used as the basis of artificial geranium oil.

Diphenyl Oxide, $C_6H_5OC_6H_5$, is a crystalline substance with a powerful odour of geranium-leaves, and is a basis of most of the synthetic geranium oils.

Duodecyl Alcohol, which is $CH_3(CH_2)_{10}CH_2OH$, occurs along with decyl alcohol in nature, and is used similarly.

Duodecyl Aldehyde is an oil, $CH_3(CH_2)_{10}CHO$, with a powerful nondescript odour, and is most useful in conjunction with ionone and similar bodies in the reproduction of violet and other fine odours. It is used in mere traces.

Ethyl Acetate, or acetic ether of the British Pharmacopœia, is a constituent of some fruit flavours, but is little used in perfumery.

Ethyl Anisate.—A crystalline compound, $C_6H_4OCH_3COOC_2H_5$, with the odour of chervil.

Ethyl Anthranilate. — A liquid, $C_6H_4NH_2COOC_2H_5$, having the sweet odour of neroli.

Ethyl Benzoate is a synthetic liquid ester, $C_6H_5OOCC_2H_5$, with odour like methyl benzoate, and sp. gr. 1·051.

Ethyl Butyrate.—A liquid, $CH_3(CH_2)_2COOC_2H_5$, having an odour similar to pineapple, and used in compounding the artificial essence.

Ethyl Cinnamate is a constituent $[C_6H_5(CH)_2COOC_2H_5]$ of the oil of storax, and occurs commercially as a liquid, sp. gr. 1·054. It is soluble in alcohol, and is used in soap perfumes.

Ethyl Heptoate, or œnanthylic ether, $CH_3(CH_2)_5COOC_2H_5$, is artificial oil of cognac, which it resembles in odour and flavour.

Ethyl Laurinate, having the formula $CH_3(CH_2)_{10}COOC_2H_5$, and a strongly odorous substance, is used as a blender in perfumery.

Ethyl Malonate. — This is $CH_2(COOC_2H_5)_2$, a colourless liquid, sp. gr. 1·061, having an apple odour, and used for compounding the fruit flavour.

Ethyl Myristinate, an odorous oil, $CH_3(CH_2)_{12}COOC_2H_5$, is more useful for making butter-flavour than in perfumery.

Ethyl Nonylate.—A useful odour for modifying flower bouquets. Its formula is $CH_3(CH_2)_7COOC_2H_5$.

Ethyl-Phenyl Acetate, $C_6H_5CH_2COOC_2H_5$, is a liquid ester similar in odour and use to methyl-phenyl acetate.

Ethyl Salicylate, which is $C_6H_4COOC_2H_5OH$, is a liquid of sp. gr. 1·137, and resembles methyl salicyate in odour and properties. It has not been found in nature.

Eugenol. — This substance, $C_6H_3OHOCH_3CH_2CHCH_2$, is the principal constituent of oil of cloves. A liquid of sp. gr. 1·072. Isoeugenol has sp. gr. 1·090. Both bodies are indispensable in all clove and carnation odours, such as 'trèfle incarnat.' *Methyl-eugenol*, $C_6H_3(OCH_3)_2CH_2CHCH_2$, occurs in cassie and is used in many fine bay rums. *Methyl-isoeugenol* is a constituent of ylang-ylang.

Farnesol.—A sesquiterpene alcohol, $C_{15}H_{26}O$, which occurs as an ester in ambrette-seeds and some acacia-flowers, and is the honey-like part of the odour of Bulgarian otto of rose. Its odour recalls that of cedar-wood, and it is of value in compounding Oriental perfumes. It is an oil, sp. gr. 0·894 at 15° C., and yields a crystalline aldehyde, *Farnesal*, $C_{15}H_{24}O$, on oxidation.

Foin Coupé (new-mown hay) is a white crystalline powder which consists principally of coumarin.

Gardenia.—In synthetic imitations of this odour terpineol, heliotropin, benzyl acetate, and linalol or geraniol are found, but no gardenia odour is perfect without a certain amount of phenyl-methyl acetate and traces of methyl anthranilate.

Geraniol, $C_{10}H_{17}OH$, is the principal alcoholic constituent (with citronellol) of otto of rose, and also of citronella, geranium, neroli, palmarosa, ylang-ylang, and other oils. It is a colourless liquid with sweet-smelling odour, sp. gr. 0·883 at 15° C., refractive index 1·4770 at 20° C., boiling-point 230° C., freely soluble in rectified spirit; strength the same as otto of rose. It forms the following esters: *Geranyl acetate*, an oil of characteristic geranium odour, sp. gr. 0·917 and refractive index 1·4628 at 15° C. *Geranyl butyrate*, an oil of fine rose odour. *Geranyl formate*, sp. gr 0·925 at 15° C., is useful to modify bouquets of the rose-geranium type. *Geranyl isobutyrate* has a similar odour to the butyrate. *Geranyl isovalerianate* gives numerous characteristic bouquets to rose odours.

Heliotropin, or Piperonal, the methylene ether of pyrocatechuic aldehyde, $C_6H_3(O_2CH_2)COH$, is found in commerce in various forms—liquid (*heliotropol*), paste, and crystals — the odours varying. Different names are also given to the products. Pure heliotropin occurs in fine white crystals which melt at 37° C. It has the delightful odour of heliotrope, and is much used for perfuming pomades, toilet-creams, lip-salves, and soaps. It blends well with other odours, such as bergamot, lemon, and coumarin. In perfuming soap with it the addition of 10 per cent. of vanillin is both economical and strengthening. The powder has a sweeter odour than the crystals, but is not pure piperonal, which is white or straw coloured, and is less soluble in rectified spirit (1 in 15) than the crystals (1 in 5). Bergamot, lemon, neroli, and almond oils blend well with this body, and traces of coumarin and vanillin are useful to round off the bouquet. Heliotropin should be kept in a cold, dark place, as light and warmth have a very deleterious effect upon its odour.

Heptyl Alcohol, or methyl-n-amyl-carbinol—

$$CH_3CH_3(CH_2)_4CHOH$$

—is a constituent of oil of cloves, and is also prepared synthetically; sp. gr. 0·834 at 0° C. *Hertyl aldehyde*, sp. gr. 0·818, has a sweet fruity odour.

Heptyl Heptoate.—The ester of heptyl alcohol and iso-heptoic or œnanthic acid, $CH_3(CH_2)_5COOH$. It has a strong fruity odour.

Hexyl Acetate.—An oil, sp. gr. 0·890 at 10° C. Of more fruity odour than the alcohol. It is one of the esters that occur naturally, and is now synthetically prepared.

Hexyl Alcohol (normal), $CH_3(CH_2)_4CH_2OH$, occurs in the inactive form as an ester in male-fern rhizome, and the angelic ester of the active alcohol exists in Roman chamomile oil. Sp. gr. 0·829 at 15° C.

Hexylene Alcohol, $C_6H_{12}O$, occurs in oil of tea-leaves.

Homolinalyl Acetate,

$C_{11}H_{19}OOCCH_3$, is an oil of bergamot odour, like linalyl acetate.

Hyacinth.—Numerous artificial hyacinth oils are obtainable. Phenyl acetaldehyde and bromostyrolene are the foundation bodies of all the best varieties. The odour is rounded off with a little terpineol, with benzyl and cinnamyl alcohols and esters.

Ionone.—This body is a ketone of the formula $C_{13}H_{20}O$, isomeric with *irone*, the odorous principle of orris-root, and is the basis of the artificial violet perfumes. Indeed, with a little natural or artificial oil of orris, ionone or its homologues and isomers are found in every artificial violet perfume on the market. It was originally sold as a 10-per-cent. solution in alcohol, but can now be obtained of 100-per-cent. strength. Ionone of commerce is a mixture in varying proportions of two isomers, α-ionone and β-ionone. α-ionone has sp. gr. 0·932 at 15° C., and refractive index 1·4980 at 20° C. It boils at 123°–124° C. at 11 mm. β-ionone boils at 127°–129° C. at 10 mm., and has sp. gr. 0·946 at 15° C., and refractive index 1·5210 at 20° C. Ionone should be used in a very dilute solution to obtain good results. The two isomers can be, and are, separated and sold, usually under trade names. From the point of view of the practical perfumer, these two isomers enable one to produce numerous 'shades' of the violet perfume with characteristic and distinct odours; α-ionone has a sweeter and more penetrating odour than β-ionone, but the latter more closely resembles the true odour of the flowers. They are prepared from citral, Professor Tiemann's original patent being No. 8736 of 1893. The whole success of this perfume lies in knowing how to dilute it sufficiently, and the careful blending with orris or a similar heavy oil to fix the perfume as well as to modify the odour. Homologues of ionone are also commercial products which still further enlarge the number of possible violet types of perfume.

Irisol.—A name (literally oil of orris) given to a mixture of otto of orris and acetanilide (2½ per cent. of the otto), and to the fluid otto freed from fatty acids.

Isoeugenol.—*See* Eugenol.

Jasmine.—Opinions differ in regard to the composition of the oil of jasmine, but all agree that it contains linalol (10 to 16 per cent.), Hesse and Müller also giving benzyl acetate 65 per cent., linalyl acetate 7·5 per cent., and benzyl alcohol 6 per cent. It also contains methyl anthranilate. Parry states that styrolyl acetate has a marked jasmine odour.

Lilacine, or Terpineol.—This is the name given by Wallach to an alcohol ($C_{10}H_{17}OH$) which is the principal constituent of the *terpinol* of Wiggers (a mixture of $C_{10}H_{16}$ and $C_{10}H_{18}O$, sp. gr. 0·885). It forms a viscid liquid, sp. gr. 0·940, and b.p. 216°–218° C. Pure terpineol occurs in cardamom oil and in other essential oils. The commercial liquid terpineol is a mixture of isomeric terpineols, and is variable in character. It has a delightful lilac odour, but is also used in compounding lily-of-the-valley, hyacinth, and May-blossom perfumes. Half an ounce suffices for a pint of spirit, with some floral extrait to round it off. Ten ounces is required for 1 cwt. of soap, in combination with heliotropin, ylang-ylang, geranium, or similar oils.

Limonene Alcohol.—Limonene is a terpene, but in the United States 'limonene alcohol' is marketed. It has a characteristic Bourbon geranium odour. Its composition is uncertain.

Linalyl Acetate.—An ester

($C_{10}H_{17}C_2H_3O_2$) of many essential oils, particularly bergamot and lavender. The commercial acetate has sp. gr. 0·902–0·912. It is used for making eau-de-Cologne and other perfumes with very weak spirit, owing to its comparatively greater solubility than the oil: 1 part = $2\frac{1}{2}$ of oil. Benzyl acetate (*q.v.*) has the same advantage.

Linalyl Butyrate.—A body [$C_{10}H_{17}OOC(CH_2)_2CH_3$] used for giving a fruity flavour to perfumes. The Formate ($C_{10}H_{17}CHO_2$) has an odour resembling the acetate, while the Propionate resembles bergamot, and is used in perfumes of the lily-of-the-valley type.

Linalol, $C_{10}H_{17}OH$, the odorous constituent of linaloe oil, is an alcohol isomeric with geraniol. It occurs in many essential oils—*e.g.*, basil, bergamot, bois de rose, champaca, cinnamon, coriander, geranium, lavender, lemon, lime, linaloe, origanum, sassafras, and ylang-ylang. It is a colourless liquid, sp. gr. 0·870–0·875. It is principally used in making lily-of-the-valley perfume.

Lyseol.—The name of a mixture of synthetics used for scenting soap. Is a dark amber-coloured oil of pleasant flowery odour not unlike hawthorn-bloom.

Magnolia. — A proprietary synthetic compound for soaps and handkerchief-perfumes. It is a thickish, red oil with an odour resembling sweet pea and a *soupçon* of cinnamon.

Menthyl Acetate, sp. gr. 0·985 at 20° C., has a pleasant, refreshing odour. It is one of the constituents of peppermint oil, and has the formula $C_{10}H_{19}C_2H_3O_2$.

Methyl Acetate, which is $CH_3C_2H_3O_2$, is a colourless fragrant liquid, sp. gr. 0·939.

Methyl Anthranilate. — A peculiarly rich perfume existing in minute quantity in neroli oil. It is the methyl ester of ortho-amido-benzoic acid, an oil, sp. gr. 1·168, and is a constituent in minute quantities of gardenia, jasmine, tuberose and ylang-ylang as well as neroli. Without it, these oils lack something of their bouquet; its odour is, however, that of neroli (*q.v.*).

Methyl Benzoate.—*See* Niobe Oil.

Methyl Cinnamate. — This [$C_6H_5(CH)_2CO_2CH_3$] is a crystalline white substance, with a strawberry odour, used in compounding liqueurs and perfumes, in the latter as a fixer. It is also used in the perfumes for smelling-salts and toilet vinegars.

Methyl Heptenone—

$(CH_3)_2CCH(CH_2)_2COCH_3$

—is associated with citral, geraniol, and linalol in many essential oils. It is a colourless liquid, sp. gr. 0·853, with an odour resembling amyl acetate.

Methyl-Methyl Anthranilate, a solid ester similar to methyl anthranilate in properties. Its formula is

$C_6H_4(NH.CH_3)(COOCH_3)$.

Methyl-Phenyl Aacetate, $C_6H_5CH_2C_2H_3O_2$, an ester with a powerful 'honey' odour, which is useful in perfumes of that type.

Methyl-Phenyl Propionate, $C_6H_5CH_2CH_2COOCH_3$ an oil of sweet odour, which is useful for flower bouquets.

Methyl Salicylate, or *Gaultheriol*, $C_6H_4OHCO_2CH_3$, is the ester of wintergreen oil. It is now made artificially. Sp. gr. 1·182 at 16° C. and boiling-point (of the commercial product) 224° C. It is soluble 1 in 6 to 8 of 70-per-cent. alcohol.

Muguet.—An artificial lily-of-the-valley perfume, the composition of which is said to be identical with terpineol.

Musk (synthetic).—Baur's product, a hydrocarbon musk, or

musk-xylene, occurs in white crystals. It is a trinitro derivative of *meta*-butyl toluene, and has the formula $C_6HCH_3C(CH_3)_3(NO_2)_3$. Principally used in soap-making, alkalies in trace assisting in developing the odour. It is good also for making sachets, but not so nice in solution. The ketone musks are another series which possess the peculiar animal odour of natural musk; dinitro-butyryl-tertiary butyl-xylene is a type. This melts at 128° C., and has a powerful musk odour. There are several others. *Musk-ambrette* is a fine musk crystal, and is the methyl ether of butyl-meta-cresol.

Nerol, $C_{10}H_{17}OH$, is an alcohol resembling geraniol in constitution, which occurs in oil of neroli as the acetate, and is also found in Mexican linaloe oil, petit-grain oil, and otto of rose; sp. gr. 0·881. Geraniol is the alcohol corresponding with α-citral, and nerol corresponds with β-citral. Nerol is used in blending odours of the rose type.

Neroli.—The odour of orange-flowers is due chiefly to linalol and its acetate, geraniol, limonene, paraffin hydrocarbons, and methyl anthranilate. Synthetic neroli oils are now produced which are almost equal in odour to the natural product; indeed, they are only distinguishable by experts. Crystalline *nerolin* (beta-naphthol methyl ether) is not so strong as the liquid form.

Nerolidol.—A sesquiterpene alcohol, $C_{15}H_{16}O$, sp. gr. 0·880, occurring in oil of orange-flowers. When used in perfumery it requires a 'fixer.'

Nerolin.—*See* Beta-Naphthol Ethyl Ether.

Niobe Oil.—This is methyl benzoate, $C_6H_5OOCCH_3$, a colourless oil, of sp. gr. 1·102 at 15° C. and b.p. 199° C. It occurs in clove, tuberose, ylang-ylang, and other oils. It is the characteristic perfume of Peau d'Espagne, and is used as a soap-perfume.

Nonyl Alcohol, which is $CH_3(CH_2)_7CH_2OH$, occurs as the caprylate in sweet-orange oil. It has an odour like rose and citronellol. Sp. gr. 0·840 at 15° C. The aldehyde is a liquid, sp. gr. 0·827, with similar odour.

Octyl Acetate is an oil $[CH_3(CH_2)_7C_2H_3O_2]$ of orange odour, sp. gr. 0·885, which occurs in the oil distilled from the seeds of wild parsnip (*Peucedanum sativum*).

Octyl Alcohol (normal), $CH_3(CH_2)_6CH_2OH$, occurs in the free state in melilot oil and oil of *Heracleum giganteum*. Its odour is said to resemble opoponax. Esters (butyrate and isovalerianate) have been found in male-fern rhizome, and others in melilot oil. The normal alcohol has sp. gr. 0·828 at 16° C.

Octyl Aldehyde, sp. gr. 0·826, is a rare and expensive synthetic product $[CH_3(CH_2)_6COH]$ used sparingly for fixing and developing other perfumes. The body occurs in neroli and rose oils.

Octyl Benzoate. A colourless liquid of weak aromatic odour, which has been little used in perfumery.

Octyl Butyrate.—An octyl ester $[CH_3(CH_2)_7OOC(CH_2)_2CH_3]$ which occurs naturally in essential oils.

Octyl Heptylate, with formula $CH_3(CH_2)_7OOC(C_2H_2)_5CH_3$, is said to be useful as a perfume.

Octylene Alcohol, $C_8H_{16}O$, is found in wintergreen oil.

Œillet, or artificial carnation, is a viscid, amber-coloured oil, and is a mixture.

Paracresol Methyl and Ethyl Esters have the characteristic odour of ylang-ylang, and

are made synthetically for use in perfume-compounding.

Paramethyl-Hydrocinnamic Aldehyde is a powerful body [$C_6H_4(CH_3)CH_2CH_2CHO$], with the lilac, lily, and heliotrope type of odour.

Phenyl Acetaldehyde is an oil, $C_6H_5CH_2CHO$, of sp. gr. 1·085, with hyacinth odour, intense and lasting, which is used in making hyacinth and narcissus perfumes.

Phenyl-Ethyl Alcohol.—A colourless fluid of sweet odour like dried rose-leaves (in which it occurs), readily soluble in dilute alcohol and in sixty times its weight of water. It is benzoyl-carbinol, $C_6H_5CH_2CH_2OH$. Sp. gr. 1·024. It appears to be the constituent which is lost in distilling (p. 176), being otto of rose retained by the condensed water. It has established itself as a constituent of many synthetic perfumes, and is prepared by acting upon a mixture of ethyl alcohol and phenyl acetate with sodium.

Phenyl-Ethyl Acetate ($C_6H_5C_2H_4OOCCH_3$) has a fine aromatic leafy odour, and the Propionate, $C_6H_5C_2H_4OOCCH_2CH_3$ is useful in blending rose odours, with which its character is allied.

Phenyl-Ethyl Glycol, or styrolene alcohol, forms three esters which are used in perfume synthesis — viz., styrolyl acetate, propionate, and valerianate. They are specially serviceable on account of the subtlety of the perfume produced in combination. The valerianate has a narcissus odour.

Phenyl-Methyl Acetate ($C_6H_5CH_2C_2H_3O_2$) and Butyrate ($C_6H_5CH_2OOCCH_2CH_2CH_3$) are good blenders, the latter having a strong and lasting odour, useful in May-flower perfumes.

Phenyl-Propyl Alcohol, $C_6H_5(CH_2)_3OH$, or hydrocinnamic alcohol, is the body which, as the cinnamate, gives the characteristic odour to Sumatra benzoin, and as the same ester it occurs in storax, and gum acaroides, while its acetate exists in cassia oil; in fact, it exists in many balsams and aromatic resins. It is made from cinnamic alcohol by reduction with sodium in presence of water, and is a thickish fluid of hyacinth and cinnamon odour, sp. gr. 1·007 at 15° C., soluble in alcohol and slightly in water. It is useful in making hyacinth, jonquil, and narcissus perfumes.

Phenyl-Propyl Cinnamate, $C_6H_5(CH_2)_3OOCCHCHC_6H_5$, occurs in storax, and is a powerful fixer which give exceptional stability and character to perfumes.

Pinenyl Acetate, of formula $C_{10}H_{15}C_2H_3O_2$, has an odour resembling lavender oil, but is little used in perfumery.

Pinoglycyl Esters. — The acetate, $C_{10}H_{16}O(C_2H_3O_2)_2$, is a solid with fruity odour. It boils at 155° C., at 20 mm., or at 127° at 13 mm. The *Propionate*, $C_{10}H_{16}O(C_3H_5O_2)_2$, is similar. They are used to a limited extent in blending.

Rhodinol. — The name first given to synthetic rose odours, of which there are many now. They consist chiefly of geraniol and citronellol, with traces of their acetic esters, and nonyl aldehyde, phenyl-ethyl alcohol, and homologues of geraniol and citronellol added in judicious traces, so as to produce odours subtilely different.

Safrol, a constituent ($C_{10}H_{10}O_2$ or $C_6H_3O_2CH_2CH_2CHCH_2$) of sassafras and camphor oils, from the latter of which it is obtained in large quantities, is a liquid chiefly used as the starting-point in synthetising heliotropin; sp. gr. 1·106.

Isosafrol—

$C_6H_3O_2CH_2CHCHCH_3$

—is present in very small amount in

ylang-ylang oil, and is a liquid, sp. gr. 1·127.

Salicylic Aldehyde is an odorous liquid, C_6H_4OHCHO, to which meadow-sweet and allied flowers owe their perfume; sp. gr. 1·173.

Styrolene or Styrol is an aromatic oil, $C_6H_5CHCH_2$, found naturally in storax; sp. gr. 0·907. An excellent fixer.

Terpenyl Acetate is a colourless liquid, $C_{10}H_{17}C_2H_3O_2$, sp. gr. 0·983 (when pure), which occurs in Malabar cardamoms, oils of Scotch fir, cyprus, and pine-needle. The *Cinnamate* is good for blending with lilac; the *Formate* occurs in Ceylon cardamoms, and is a liquid, sp. gr. 0·998, resembling geranyl formate in odour and properties. The *Propionate* is a good lavender substitute.

Thymene, obtained as a by-product in the isolation of thymol, is much used as a soap perfume.

Undecyl Alcohol, or methyl-n-nonyl carbinol—

$$CH_3(CH_2)_9CH_2OH$$

—has been isolated from Algerian rue oil, and resembles decyl alcohol in properties. The aldehyde is used for blending in perfumery.

Undecylene Alcohol, $CH_2CH(CH_2)_8CH_2OH$, is used in compounding by expert perfumers. The aldehyde is a good blender.

Vanillin, the methyl ether ($C_6H_3OHOCH_3COH$) of protocatechuic aldehyde, is the odorous principle of vanilla, and a constituent of other perfumes; it is now manufactured by acetylating eugenol, or preferably isoeugenol, with acetic anhydride; the acet-eugenol in acetic solution is then oxidised with potassium permanganate, filtered, and the filtrate neutralised, evaporated, and the residue acidified and extracted with ether. The ethereal solution is then treated with sodium acid sulphite, and the double sulphite separated and split up with sulphuric acid, the vanillin being extracted with ether. The purified vanillin occurs in fine white crystals. It has the odour of vanilla in an intense degree. The following notes by Schimmel give an idea of its capabilities:—

Vanillin is easily soluble in concentrated and dilute alcohol; also in water (especially hot water), ether, glycerine, and petroleum jelly. In confectionery and chocolate-making, vanillin can most advantageously be used in the form of a 2½-per-cent. Vanillin Sugar, which, weight for weight, equals in aroma the best vanilla, and should be used in precisely the same manner. To make this, take of crystallised vanillin ʒvj. and dissolve in ʒiv. of absolute alcohol; pour this solution upon 2 lbs. 2 oz. of the finest sugar, and mix it thoroughly in order to distribute it equally. After evaporating the alcohol in a warm place, and when the sugar has become thoroughly dry, powder it in an earthenware mortar and sift. It is then ready for use, and may be kept an indefinite time without losing aroma. For liqueur-making, vanillin is best used in the form of a 2½-per-cent. Vanillin Essence, which, bulk for bulk, equals the best vanilla. To make it, dissolve vanillin ʒvj. in rectified spirit ʒxxv., and add distilled water ʒx.

This essence may be used in making colourless perfumes instead of essence of vanilla.

Vetivol. — The characteristic alcohol of oil of vetiver, prepared under a patent by Fritsche & Co., from the oil by removing the ketones, esterifying the remaining oil with a dibasic acid, separating the non-alcoholic bodies from the product, and saponifying the ester. Two alcohols are obtained, $C_9H_{14}O$ (sp. gr. 0·980) and $C_{11}H_{18}O$ (sp. gr. 1·020).

The compounding of individual odours from definite chemical products is now an important branch of perfume manufacture. The technique is complicated, and the methods are in most instances more or less secret, being the result of long experience and much experiment. We illustrate them with the formulas from patent specifications, which sufficiently show how complicated the odours become, considering that the separate ingredients are in most instances the result of intricate processes.

Synthetic Ylang-ylang

Linalol	250	grams
Geraniol	130	,,
Cadinene	50	,,
Eugenol	2	,,
Para-cresol methyl ether	1	,,
Methyl benzoate	60	,,

Mix and add

Benzyl alcohol	150	,,
Benzyl acetate	100	,,
Benzyl benzoate	67	,,
Isoeugenol	20	,,
Cresol	1	,,
Isoeugenol methyl ester	40	,,
Eugenol methyl ester	100	,,
Methyl salicylate	20	,,
Methyl anthranilate	0·5	,,

Synthetic Rose

Geraniol	80	parts
Citronellol	10	,,
Linalol	2	,,
Phenyl-ethyl alcohol	1	,,
Octylic aldehyde	0·5	,,
Citral	0·25	,,

Synthetic Cassie

Methyl salicylate	550	grams
Benzyl alcohol	200	,,
Linalol	80	,,
Geraniol	12	,,
Terpineol	28	,,
Ionone	20	,,
Irone	60	,,
Cyminic aldehyde	30	,,
Decylic aldehyde	20	,,

The foregoing three formulas are given as exemplifying the constituents or bases which go to make, by patented processes, the strong artificial perfumes named.

The so-called Concentrate Perfumes are closely allied to the synthetics, being, in fact, compounded from natural concrete ottos (*see* p. 179) and synthetics. They are exemplified in the following two formulas of American origin :—

Violet Anglaise

Rose liquid concrete	℥ss.	Oil of bergamot	℥ij.
Synthetic rose	℥ss.	Ionone	℥j.
Jasmine liquid concrete	℥ss.	Violet liquid concrete	℥iiss.
Concrete oil of orris	℥ss.	Liquid musk	℥x.

French Rose

Rose liquid concrete	ʒss.	Jasmine liquid concrete	ʒij.
Synthetic rose	ʒiss.	Oil of patchouli	ʒiss.
Oil of rose geranium	ʒj.	Synthetic hyacinth	ʒij.
Violet liquid concrete	ʒij.	Heliotropin	ʒj.
Tuberose liquid concrete	ʒj.	Liquid musk	ʒj.

Liquid Musk is a saturated solution of synthetic musk in commercial benzyl benzoate. The above quantities make 240 oz. of perfume with rectified spirit five volumes and distilled water two volumes. The rest of the formulas here appended require no explanation.

Synthetic Perfume Base

(For this series of formulas)

Spirit of wine	ʒxx.
Rose-water	ʒv.
Solution of ammonia	mv.
Simple tincture of benzoin	ʒiv.
Tincture of orris (1 in 1)	ʒij.

Carnation

Synthetic dianthin	ʒj.
Base	ʒxxx.

Tint pale pink.

Heliotrope

Heliotropin	ʒj.
Essence of vanilla	ʒij.
Oil of bitter almonds	mviij.
Essence of musk	ʒj.
Base	ʒxxx.

Tint a pale mauve.

Lilac

Synthetic lilac	ʒv.
Essence of civet	ʒiv.
Essence of vanilla	ʒss.
Oil of bitter almonds	mij.
Base	ʒxxij.

Tint pale mauve.

Jasmine

Synthetic jasmine	ʒj
Base	ʒxxx.

Tint pale green.

Syringa

Synthetic syringa	ʒiv.
Base	ʒxxv.

Violette de Parme

I

Violetton	ʒj.
Synthetic jasmine	mxx.
Coumarin	ʒss.
Ylang-ylang essence	ʒv.
Base	ʒxx.

Colour pale green.

II

Violetton	ʒij.
Oil of neroli	mx.
Oil of bitter almonds	mx.
Synthetic jasmine	mxx.
Base	Oj.

III

Violetton	ʒiij.
Essence of musk	ʒij.
Rose triple	ʒiij.
Base	ʒxxx.

Synthetic perfume materials are made now in great variety in France, Great Britain and Holland. These are of excellent quality.

BEVERAGES

Summary.—Effervescing Powders—Theory of the Reaction Explained—Acid and Alkali Equivalents—Lemon Kali—Sherbet—Lemonade Crystals—Ginger-beer Powder—Effervescing Salines—Seltzogene-charges—Syrups (Fruit and Flavoured)—Aërated Waters—Soluble Essences—Colourings—Syrups for Aërated Waters—Syphon-trade—Ales and Beers—Alcohol-determination—Koumiss—Cordials—Wine Essences—Medicated and Medicinal Wines—Medicated and Artificial Wine Essences—Bitters and Liqueurs.

THIS chapter deals with many of the forms in which chemicals, drugs, and essential oils are compounded in order to provide drinks for man. Since the earlier part of the nineteenth century this has been an important branch of pharmacy, and the development of it has in several instances been so specialised that the exponents have abandoned pharmacy to devote themselves solely to providing beverage-makers with the materials which they require.

EFFERVESCING POWDERS

The ingredients used in compounding effervescing powders (as distinguished from granular effervescing salts, which, being medicinal, are not included in this chapter) are powdered tartaric acid, bicarbonate of sodium, and powdered or icing sugar, with certain colouring and flavouring matters which give the respective powders their names. Citric acid is not so suitable for these powders as tartaric acid, because it contains water of crystallisation, which tends to cake the powder. In point of fact, tartaric acid cannot be improved upon, but there is a demand by some people for something cheaper, and such things are provided in Tartaraline (acid potassium sulphate) and Citrolene, which, reacting with sodium bicarbonate,

give a steady evolution of carbonic acid, a clear solution, and neutral salts which are not more active physiologically than sodium tartrate.

It may be useful to refer here to the characters and products of the substances used in producing effervescing powders. Sodium bicarbonate is universally employed as the alkali, because it is cheap and easily obtainable of a high degree of purity, and when mixed with tartaric acid, in excess or not, it forms a clear solution. Potassium bicarbonate is not only dearer, but more of it (about 12 per cent.) is required to neutralise the same weight of acid, and if tartaric acid is used in excess a precipitate of cream of tartar (acid potassium tartrate) is formed. Sodium bicarbonate effervesces in presence of an acid and water because it is essentially sodium carbonate and carbonic acid. The molecule is represented as $NaHCO_3$, but at one time this was doubled and written Na_2CO_3,H_2CO_3. By heating it is decomposed thus (using the old formula):—

$$Na_2CO_3,H_2CO_3 = Na_2CO_3 + H_2O + CO_2.$$

In contact with an acid and water (using the current formula) we get such reactions as—

$$NaHCO_3 + HCl + H_2O = NaCl + 2H_2O + CO_2.$$

Here the acid is monobasic, so that one molecule only is required to combine with the single atom of sodium in the bicarbonate. Tartaric acid is dibasic; hence two molecules of the bicarbonate go to form a neutral product with one molecule of tartaric acid, thus—

$$2NaHCO_3 + H_2C_4H_4O_6 + H_2O = Na_2C_4H_4O_6 + 3H_2O + 2CO_2.$$

Perfectly dry sodium bicarbonate and tartaric acid mixed together keep indefinitely without reacting (*i.e.*, without evolution of carbonic-acid gas), but as soon as water comes into contact with the mixture either by absorption from the air, or in making an effervescing draught, reaction takes place. Hence the water molecule is introduced in the above equation. Citric acid is tribasic—that is, one molecule of it requires three

molecules of sodium bicarbonate to form a neutral product—as is shown by the following equation :—

$$3NaHCO_3 + H_3C_6H_5O_7,H_2O = Na_3C_6H_5O_7 + 4H_2O + 3CO_2.$$

Owing to the molecule of water of crystallisation in the acid this reaction begins to take place as soon as the powdered substances are mixed together—a property which is utilised in making granular effervescing preparations, as the caking that results, especially in presence of sugar, affords the granules. Tartaric acid alone does not granulate with sodium bicarbonate.

The following are the quantities of acid substances commonly used in making effervescing powders and baking-powders which neutralise the stated quantity of sodium bicarbonate. In every case a slight allowance is made for impurity natural to the substances.

SODIUM BICARBONATE, $NaHCO_3$, = 83·43. **One avoirdupois ounce** (437½ grains) neutralises

Acid Phosphate of Ammonium ($NH_4H_2PO_4$ = 115), **300 grains.**
Acid Phosphate of Calcium [$CaH_4(PO_4)_2,H_2O$ = 252], **330 grains.**
Acid Phosphate of Potassium (KH_2PO_4 = 136), **354 grains.**
Acid Phosphate of Sodium (NaH_2PO_4,H_2O = 158), **418 grains.**
Acid Sulphate of Potassium ($KHSO_4$ = 136), **1⅓oz. 42 grains.**
Acid Sulphate of Sodium, dried ($NaHSO_4$ = 120), **1 oz. 188 grains.**
Alum, dried [$Al_2(SO_4)_3,(NH_4)_2SO_4$ = 468], **428 grains.**
Citric Acid ($H_3C_6H_5O_7,H_2O$ = 208·5), **380 grains.**
Cream of Tartar ($KHC_4H_4O_6$, = 186·75) (B.P. salt is 97½ per cent. pure), **2 oz. 120 grains.**
Tartaric Acid ($H_2C_4H_4O_6$ = 148·92), **390 grains.**

Alum is not, of course, used for making effervescing powders. The sole object in grouping it and other acid substances here with citric and tartaric acids is to save repetition of the principle when we come to deal with baking-powders. Tartaraline contains starch or other inert powder which dilutes acid sulphate of potassium approximately to the neutralising-power of cream of tartar. It may also be noted that in practice complete neutrality is not obtained with acid calcium phosphate when used in baking-powder, the reaction being—

$$CaH_4(PO_4)_2 + 2NaHCO_3 = Na_2HPO_4 + CaHPO_4 + 2CO_2 + 2H_2O.$$

Commercial calcium acid phosphate contains from 2 to 50 per cent. of calcium sulphate (*C. & D.*, 1911, I., 545), and for

baking-powders it is customary to use two parts to one part of sodium bicarbonate.

Substitution of a cheaper for a dearer acid material in making effervescing powders concerns only the few, tartaric acid being generally used, as experience shows it to be eminently satisfactory.

Lemon Kali deserves the first place amongst effervescing powders, for although not of great antiquity the enormous quantities of it consumed under this and other names give it preference. It appears that the powder was originated by Charles Gomond Cooke, one of the founders of Godfrey & Cooke, as 'Lemon and Kali,' Mr. Cooke at the same time designing for it the bottles known as *Kalies*. Since then it has passed through many phases before reaching farthing packets to be retailed by confectioners. Some pharmacists still keep up the old name 'Lemon and Kali.' Why 'Kali,' since that is the modern Teutonic name for potash? Dr. John Attfield explained that in its earliest or Arabic sense the word signified ashes, and until Leblanc's invention of a process for making soda from salt that alkali was also made from ashes—viz., those of seaweed.

In compounding lemon kali, the ingredients should be well dried before they are mixed, and the mixing should be done in a mortar. The best plan is to mix the tartaric acid and bicarbonate in the mortar first, then place on paper. Now put a few ounces of the sugar in the mortar, over this sprinkle the oil of lemon, and stir well; add more sugar, and so on until it is thoroughly blended; then mix in the soda and acid, and sift several times. If made by the hundredweight the oil of lemon must still be rubbed up with a sufficiency of sugar to divide it thoroughly without leaving the sugar lumpy, then this powder may be added to the others, and the whole passed several times through a Gardner's mixer and sifter. The makers of this machine have adapted to it a useful spraying-apparatus which enables the flavouring to be gradually distributed over the powders as they are brushed through the sieve. The following are typical formulas, the second being intended for cheap trade.

I

Pulv. sacch. alb.	lb. iv.
Pulv. acid. tart.	lb. ij.
Pulv. sodii bicarb.	lb. ij.
Ol. limonis	ʒij.

M.

II

Pulv. sacch. alb.	lb. vij.
Pulv. sodii bicarb.	lb. ij.
Pulv. acid. tart.	ʒxxx.
Pulv. potass. tart. acid.	ʒiv.
Ol. limonis	ʒij.

M.

Citrated Kali is the name by which lemon kali goes in the United States, and it also has a variety of names in Britain, Persian Sherbet being perhaps the commonest; but there are many kinds of sherbet which do not differ materially from the foregoing except in respect to flavour and colour. Even more care is required in adding colouring than in mixing flavours, for if the colour be imperfectly mixed the powder has a spotted appearance. The best colourings, on the whole, are aniline dyes—yellow, orange, magenta, and so on. A little of them goes a long way: they are harmless and give nice tints, which is the chief consideration in cheap sherbets. The dye, in the proportion of about 1 gr. to 1 lb. of sherbet, is dissolved in 30 or 40 minims of proof spirit, and mixed with the sugar in the manner already explained, the sugar being afterwards dried gently in a warm room before the flavouring is added. It should be noted that the sherbets sold by confectioners contain a small proportion of soda and acid, their combined weight being as 1 to 6 or 8 parts of sugar, which is sufficient for powders taken dry on the tongue, and on the whole safer for children, upon whom ½ oz. of good lemon kali would act as a laxative. The subjoined proportions of colourings and flavourings are for 1 lb. of sherbet:—

Ambrosia

Safranine	gr. ss.
Essence of vanilla	mx.
Oil of bergamot	mvj.

Noyeau

Solution of carmine	mv.
Essence of bitter almonds	mxx.
Essence of vanilla	mv.

Apricot Nectar

Solution of carmine	mx.
Essence of apricot	ʒss.

Cherry

Solution of carmine	ʒss.
Essence of cherry	ʒss.

Gooseberry Pop

Essence of gooseberry	ʒj.
Chlorophyll	gr. ij.

Orgeat		**Raspberryade**	
Essence of peach . .	ʒss.	Solution of carmine. .	ʒss.
		Tincture of orris . .	ʒij.
Pineapple		**Strawberry**	
Azo-orange . . .	gr. ss.	Solution of carmine. .	ɱxx.
Essence of pineapple .	ʒss.	Essence of strawberry .	ʒiss.

The addition of 1 oz. of powdered gum arabic to every 2 lbs. of lemon kali (without flavour) makes plain Cream Soda, and the same may be added to any other powders to give body and abundant froth.

Non-effervescing Lemonade Powder for producing home-made lemonade extemporaneously is now a popular article. The formula for it is :—

Acid. tartaric.	ʒj.
Ol. limonis	ɱxx.
Tr. curcumi	ʒj.
Pulv. sacch. alb.	lb. j.

Mix the tincture and oil with a few ounces of the sugar, then add to the bulk and sift.

This is put up in 1-oz. packets to retail at a penny, the directions being :—'Empty the contents of the packet into a pint of cold water and stir, when a pint of delicious lemonade will be produced.' Other flavours may be employed in the same manner ; for example, those given above.

Fruit Crystals, although intended for a similar purpose to the foregoing, are made without sugar. The basis is citric acid coarsely powdered. To this is added :—For (1) Ginger : gingerin ʒss., spirit colouring ʒj. ; for (2) Lemon: ol. limonis ʒj., crocein B gr. ij., s.v.t. ʒj. ; for (3) Raspberry: fuchsine gr. ij., essence of raspberry ʒss. ; for (4) Orange : oil of sweet orange ʒss., azo-orange gr. ij., proof spirit ʒj. These quantities are sufficient for 10 oz. of citric acid. The colour and flavour should in each case be mixed together before adding to the citric acid, which is then to be powdered. Many other flavours than the above can be produced. An ounce of the fruit crystals and 1 lb. of sugar form with a pint of boiling water the fruit syrup, which with cold water *quant. suf.* makes a refreshing summer drink. If tartaric acid is used instead of

citric acid the resulting crystals may be done up in packets with a paraffin-paper wrapping. Tartaric acid destroys yellow and orange dyes. (*See also* Supplementary Chapter.)

Effervescing Tablets and thirst-quenchers are best made by compression, using such powders as lemon kali, &c., which have not been dried before mixing, or if so they should be damped with 2 dr. of proof spirit to each pound of powder, then granulated by sifting and drying before compressing. A similar article, intended for putting into a tumblerful of water, is made by mixing 8 oz. of icing sugar with 1 oz. each of sodium bicarbonate and tartaric acid and 10 drops of oil of lemon; make this powder into a paste with a sufficiency of rectified spirit, roll out the mass to the thickness of $\frac{1}{4}$ inch upon paraffin-paper, divide into squares, and dry at a gentle heat. Other flavours than lemon may be used. Effervescent Pastilles are also made with acid and sodium bicarbonate separately, but they are not popular, and the method suggested for making them is objectionable. This is shown by the following directions for Raspberry Pastilles :—

I	
Bicarbonate of sodium	℈ij.
Powdered sugar	℈j.
Raspberry essence	gtt. j.
Solution of carmine	a sufficiency
Mucilage of acacia	a sufficiency

To make a pastille.

II	
Tartaric acid	ʒss.
Powdered sugar	ʒss.
Mucilage of acacia	a sufficiency

To make a pastille.

To produce an effervescing drink one of the alkaline pastilles is dissolved in a quarter of a tumblerful of water, then an acid one; but the method is clumsy, and the pastilles made with acacia mucilage become like bricks on keeping. Mucilage of tragacanth is better.

Ginger-beer Powder.—The effervescing powder is made by adding to lemon kali (containing half the usual amount of lemon) gingerin ♏v. dissolved in tincture of quillaia ʒss., this being sufficient for 1 lb. of kali. 'Ginger-beer powder' is, strictly speaking, what is used to add to sugar and water for making fermented ginger-beer. We discuss the manufacture of the

beer later. The ingredients of the powder vary somewhat, but the following are typical :—

I

Bruised ginger	℥j.
Cream of tartar	℥iss.
Oil of lemon	♏vj.

Mix.

To make 2 or 3 gals. of beer.

II

Bruised ginger	℥j.
Cream of tartar	℥iss.
Oil of lemon	♏vj.
Powdered sugar	℥j.

Mix.

Sufficient for 2 or 3 gals.

III

Bruised African ginger	℥L.
Cream of tartar	℥xxx.
Powdered sugar	℥ix.
Oil of lemon	℥j.
Powdered alum	℥v.

Mix. Put up in 2-oz. packets.

IV

Cream of tartar	℥j.
Rice-flour	℥ss.
Sugar	℥ss.
Gingerin	♏xx.
Oil of lemon	♏iv.

Triturate the gingerin and oil with the rice-flour for two minutes, then add the sugar, and lastly the cream of tartar.

For 2 or 3 gals.

NOTE.—The addition of rice-flour to ginger-beer powder does something more than make bulk, because it helps to feed the yeast-plant, and so provide a much brisker brew. Some of the best powders in the market contain rice-flour or farina, and, as far as we can judge, their superiority is due solely to this addition.

The last of these powders does not require the preliminary infusion necessary in the other cases ; with this exception the following general directions apply to the whole :—

Pour 1 gal. of boiling water over the contents of the packet, let it stand for an hour, then add 1 lb. of sugar, 1 gal. of cold water, and two tablespoonfuls of brewer's barm or ½ oz. of German yeast spread on a piece of toast floating on the brew. Allow it to 'work' for three or four hours, then strain through flannel, and bottle.

A common label is the following :—

GINGER-BEER POWDER

FOR MAKING

AN EXCELLENT, CHEAP, AND WHOLESOME BEVERAGE

Directions for Use.—Dissolve 2 lbs. of moist or lump sugar with one of the Powders in 1 gal. of boiling water, then add 2 gals. of cold water, and when sufficiently cold ferment with yeast. No straining required.

N.B.—The white of one or two eggs well mixed with the yeast before adding will greatly facilitate the fermentation.

Effervescing Salines.—In compounding these the ingredients should be exceptionally well dried separately before mixing, and sifted several times. A Government analysis of Lamplough's saline showed tartaric acid 45·7, sodium bicarbonate 52·4, and potassium chlorate 1·9 per cent. The Canadian Government chemist has reported that Abbey's saline showed 53·7 parts of sodium bicarbonate, 39·75 parts of tartaric acid, 5·1 parts of magnesium sulphate, and 15·3 parts of sugar, but see *C. & D.* 1901, I., p. 730.

Summer Salines

I

Sodii bicarb.	ʒij.
Pulv. acid. tartaric.	ʒiss.
Pulv. pot. acid. tart.	ʒiss.
Pulv. sodii sulph. exsicc.	ʒj.
Pulv. sacch. alb.	ʒvj.

M.

II

(Popular form for Eno substitute)

Pulv. acid. tart.	ʒij.
Pulv. sodii bicarb.	ʒij.
Magnes. sulphat.	ʒj.
Pulv. pot. bitart.	ʒij.
Mag. cit. efferves.	ʒij.
Pulv. sacch. alb.	ʒiv.

M.

The proprietors of Eno's fruit salt have under the Trade-marks Act, 1905, registered the words 'Fruit Salt' as their property.

III

Tartaric acid	ʒix.
Bicarbonate of sodium	ʒx.
Chlorate of potassium	ʒij.
Dried sulphate of magnesium	ʒiij.
Sugar	ʒiij. or a sufficiency

Mix.

Laxative Lemonade[1]

(Improved Seidlitz Powders)

Blue paper—

Pulv. seidlitz	ʒij. ℈ij.

White paper—

Pulv. ac. citric.	gr. xxxv.
Ol. limonis	mss.

[1] Limonade Purgative was an unofficial synonym for liq. mag. cit., B.P., 1885. This is made by dissolving citric acid 200 grains in water 2 oz., and in this dissolving magnesium carbonate 100 grains. The solution is filtered into a soda-water bottle, then syrup of lemons ½ oz. and water added to nearly fill the bottle; lastly, potassium bicarbonate 40 grains in crystals is added, the bottle corked and the cork tied down. Various medicinal lemonades are used in France, and occasionally in this country, for allaying the thirst of feverish and sick patients. These are hydrochloric, nitric, phosphoric, and sulphuric acid lemonades, each being made with the 10-per-cent. dilute acid according to the following formula:—The dilute acid ʒss., simple syrup ʒiij., water ʒxxv.; mix. To be used as a drink.

Diabetic Drink

Acidi citrici . . .	ʒj.
Spt. vini gallici . .	ʒss.
Glycerini . . .	ʒj.
Aquam ad . . .	ʒxvj.

M.S.A.

Any other sugarless flavouring than brandy may be used.

Imperial Drink

(South-Western Fever Hospital)

Dissolve a drachm and a-half of tartaric acid in an ounce of water, make up to a pint with boiling water, adding sugar and lemon to flavour.

Artificial Carlsbad Salts, Ph.G.

Dried sulphate of sodium	ʒxxij.
Sulphate of potassium .	ʒj.
Chloride of sodium . .	ʒix.
Bicarbonate of sodium .	ʒxviij.

(Six grams to be dissolved in a litre of water.)

These ingredients to be powdered separately and mixed. Sometimes the mixture is dissolved in the smallest possible quantity of hot water, and evaporated with constant agitation so as to obtain granulated crystals, or it may be allowed to evaporate slowly to get larger crystals, but the resulting 'salt' is not always uniform when made in this way.

Magnesian Lemonade

Pulv. sacch. alb. . .	lb. iss.
Pulv. acid. citric. . .	ʒv.
Mag. carb. pond. . .	ʒiij.
Ol. limonis . . .	ʒss.

M.

Orange Drink

Dilute sulphuric acid .	ʒiv.
Sugar	ʒxvj.
Tincture of orange . .	ʒiss.
Water	Oiiss.

Dissolve the sugar in the water and add the other ingredients.

Effervescing Carlsbad Salts

Dried artificial Carlsbad salts	ʒxj.
Bicarbonate of sodium .	ʒvj.
Tartaric acid . . .	ʒv.

Mix and dry; then keep in well-closed bottles.

In retailing the effervescing Carlsbad salts care should be taken to describe it as being made from artificial salts. The original formula of magnesian lemonade has the magnesia in the proportion of 6 to 4 of citric acid, with the result that the magnesia is only partly dissolved. So prepared it is a kind of effervescing milk of magnesia, but the real milk of magnesia is a mixture of magnesium hydroxide (p. 658).

Seltzogene-charges are universally made from tartaric acid in small crystals, with the exception of a patented article made from acid sulphate of sodium in fused cakes. The only other efficient substitute is citric acid, and if this is obtainable at the same price as tartaric acid it is cheaper, because less of it is required. We give both in the following recipes.

Two-pint Charges

Tartaric acid . .	ʒiv. ℈ij.
or Citric acid . .	ʒiv. ℈j.
Bicarbonate of sodium .	ʒv. ℈ij.

Three-pint Charges

Tartaric acid . .	ʒv. ℈ij.
or Citric acid . .	ʒivss.
Bicarbonate of sodium .	ʒvij.

Five-pint Charges

Tartaric acid . .	℥j. ℈ij.
or Citric acid . .	℥j. gr. xv.
Bicarbonate of sodium .	ʒx. ℈ij.

Eight-pint Charges

Tartaric acid . .	℥xj. ℈ij.
Bicarbonate of sodium .	ʒxiij. ℈ij.

The above are all to be taken by apothecaries' weight. In practice avoirdupois ounces and apothecaries' drachms may be taken; thus ½ oz. and ʒj. = ʒiv. ℈ij.; ¾ oz. = ʒv. ℈ij. or ʒv. ℈j.; 1 oz. = ʒvij. ℈j.; 1 oz. ʒj. = ℥j. ℈ij.; and 1 oz. ʒiij. = ʒx. ℈ij. The bicarbonate of sodium is intentionally in

CHARGES FOR SELTZOGENES.

.....PINT SIZE.

For the Preparation of Seltzer Water, Eau de Vichy, Soda Water, Sparkling Lemonade, Aërated Wines, &c.

DIRECTIONS FOR USE.

1st.—Nearly fill the lower globe with water, by means of the LARGE funnel (leaving the neck empty), and then close the neck securely with the stopper, taking care that no water passes into the small globe.

2nd.—Place the small funnel above the stopper (which should be quite dry) and pass into the small globe a charge of Tartaric Acid in small crystals (White paper), and a charge of Bicarbonate of Sodium in powder (Blue paper); then remove the stopper and funnel.

3rd.—Place the tap in the Seltzogene and screw it down QUITE TIGHT.

4th.—Incline the Seltzogene, and so pour water into the small globe until it is one-third filled. You may shake the Seltzogene from time to time with a CIRCULAR movement, keeping it always UPRIGHT, particularly when the water has been prepared for some days. An hour later pour a little more water into the top globe from the lower one, and again shake with the circular movement. In two hours or so the water is ready for drinking.

N.B.—To prevent explosion about half a tumbler of water should be drawn from the Seltzogene after being five minutes in charge.

Care should be taken to let off by the tap all the Carbonic-acid Gas before recharging the Seltzogene.

excess, as it assists in retarding decomposition of the acid and alkali so as to give a gradual evolution of gas. In charging the seltzogene the acid should be put into the upper globe first,

then the soda ; for if the reverse is done the solids remain partially undissolved when the water has all been used up. Although sufficient water to effect decomposition and dissolve the resulting sodium tartrate is poured into the upper globe, after an hour or two white lumps of a mixture of tartrate and bicarbonate of sodium and tartaric acid float in the water. The excess of bicarbonate helps in the formation of these lumps, and it will be seen that after some of the aërated water is drawn off, there is brisk effervescence from the lumps, which continues until a certain pressure of gas is again reached, when the effervescence ceases. This has been found to be due to the retarding influence of the pressure of carbonic-acid gas.

Powders for making potash, seltzer, and other waters are also required, these being dissolved in the water put into the lower globe. The seltzogene-makers give quantities which are based upon medicinal requirements, and it is, as a rule, inadvisable to give as much. The following we have found to please the public palate :—

Potash Powders		**Seltzer Powders**	
Potass. bicarb. . .	℥ss.	Sodii chloridi . . .	℥ss.
		Sodii bicarb. . . .	℥ss.
More than this may be given if desired. It is advisable to ask customers what they prefer.		Sodii sulphat. . .	gr. j.
		Sodii phosphat. . .	gr. j.
		M.	

In each case for the 5-pint seltzogene. Later on in this chapter we give formulas for seltzogene-syrups.

SYRUPS

As an adjunct to aërated waters, or even for the production of non-effervescing drinks, syrups are as indispensable as the water, and there is no branch of compounding in which American pharmacists are more expert than in this, the reason being that a large part of their business consists in selling effervescing drinks prepared at the soda-fountain. American drinks are as far ahead of English as a glass of a good vintage of champagne is above a glass of the gooseberry article, and it might be profitable to take a lesson or two from transatlantic experience.

Fruit Syrups.—With the exception of raspberry and strawberry, fruit syrups are rarely made from the fresh fruit, artificial essences, artificial colouring, and acidulated simple syrup sufficing to give combinations which are pleasing to the public. We may, however, state that the general formula for natural fruit syrups is as follows :—

Press the juice out of the fresh fruit, strain, and add 6 per cent. of rectified spirit and salicylic acid in the proportion of 2 dr. to the gallon—*i.e.*, 10 oz. rectified spirit and 2 dr. salicylic acid to each gallon of juice. Set aside for twenty-four hours, to allow the pectinous precipitate to form ; decant from this, and strain the sediment through flannel, returning the filtrate until quite clear. The liquid from the above quantity should measure a gallon. In it dissolve, by bringing to the boil quickly, 12 lbs. of granulated sugar. Set aside to cool, skim, and bottle.[1]

Another plan is to crush the fruit in a stoneware jar and add to it three-fourths of its weight of granulated sugar, mix well ; allow to stand overnight, and next morning bring to the boil and strain. Black currants, blackberries, and plums give dark-coloured syrups which are useful for colouring-purposes and not to be despised as a basis for peculiar flavours. The proportion of sugar must be adapted to the fruit—*e.g.*, plums can take weight for weight, black currants almost as much, but blackberries only about half their weight of sugar to form a syrup. Fruit jams may also be used thus : jam 4, water 4, S.V.R. 1 ; mix and filter in two days ; dissolve in the filtrate sugar 4.

Strawberry Syrup

Take of fresh ripe strawberries 10 quarts, white sugar 24 lbs., water 2 pints. Spread a portion of the sugar over the fruit in layers, let it stand four or five hours, express the juice, strain, add the remainder of the sugar and water, raise to boiling-point, and strain. To the strained syrup add salicylic acid ʒss. dissolved in S.V.R. ʒij.

Raspberry Syrup

May be made similarly ; or take of raspberry juice ½ pint, red-currant juice syrup (1½ sugar to 1 juice) 8 pints, and mix.

The Basis for Artificially-flavoured Syrups is a mixture of 6 pints of simple syrup (B.P.) and 2 pints of water, 1 oz. of citric or tartaric acid and 30 gr. of salicylic acid being

[1] *See* p. 341 in regard to the use of preservatives, and the Appendix respecting Australian and United States regulations restricting their use.

dissolved in the water. The following are the flavours and colourings required to be added to this volume of syrup :—

Apricot: Essence of apricot ʒss., liq. cocci ʒij.
Black Currant: Ess. black currant ʒiij., liq. cocci ʒj., caramel ʒss.
Cherry: Ess. cherry ʒvj., liq. cocci ʒj., caramel ʒss.
Fruiti Fru: Ess. orange ʒss., ess. lemon ʒvj., ess. vanilla ʒij. liq. cocci ʒiij., caramel ʒiij.
Orange: Made with tincture of sweet-orange peel and oil similarly to lemon. *See* below.
Peach: Ess. peach ʒss., liq. cocci ʒij., caramel ʒj.
Pear: Ess. pear ʒss., caramel ʒij.
Pineapple: Ess. pineapple ʒiij., tr. croci ʒvj.
Plum: Ess. plum ʒss., caramel ʒss., liq. cocci ʒj.

The essences should in each case (except Fruiti Fru) be mixed with double their volume of rectified spirit. There are formulas for most of the essences in this book. Other fruit syrups may be made similarly, using from ʒij. to ʒvj. of the essence to a gallon of acidulated syrup, according to the nature of the essence (for some of them have a sickening effect if used excessively), and cochineal, caramel, or saffron to colour. The flavour and colour may be added, a drachm at a time, until the proper point is reached.

In the essences section are numerous formulas intended for use in aërated-beverage manufacture. Some of these may advantageously be used for compounding fruit syrups.

Ginger-ale Syrup

Soluble essence of ginger	ʒiv.
Soluble essence of capsicum	ʒij.
Soluble essence of orange	ʒij.
Soluble essence of tangerine	ʒij.
Soluble essence of lemon	ʒj.
Spirit of rose	ʒj.
Spirit of neroli	ʒj.
Citric acid	ʒiss.
Cochineal colouring	ʒj.
Caramel	ʒij.
Syrup	Cong. j.

Mix.

Ginger Syrup

Soluble essence of ginger	ʒss.
Tincture of fresh lemon-peel	ʒij.
Caramel	ʒj.
Syrup	Oj.

Mix.

Lemon Syrup

I

Oil of lemon	mxx.
Rectified spirit	ʒss.

Dissolve and add

French chalk	ʒj.
Water	ʒj.

Allow to stand a day or two,

shaking occasionally; filter and add to a syrup made as follows:—

Sugar	ʒxij.
Citric acid	ʒj.
Water	ʒvij.

The oil of lemon and spirit may be replaced by 1 oz. of tr. limonis recens.

II

Oil of lemon	ʒij.
Otto of rose	mij.
Rectified spirit	ʒij.
Citric acid	ʒij.
Syrup	Cong. ij.

Prepare as above.

Lemon Squash

Tincture of lemon-peel	ʒiv.
Oil of lemon	ʒss.
Rectified spirit	ʒij.

Shake well, and after standing a few hours draw off the clear tincture from the oil. Add

Tartaric acid	ʒij.
Syrup to	Cong. j.

Colour with tincture of saffron ʒj. and caramel a sufficiency.

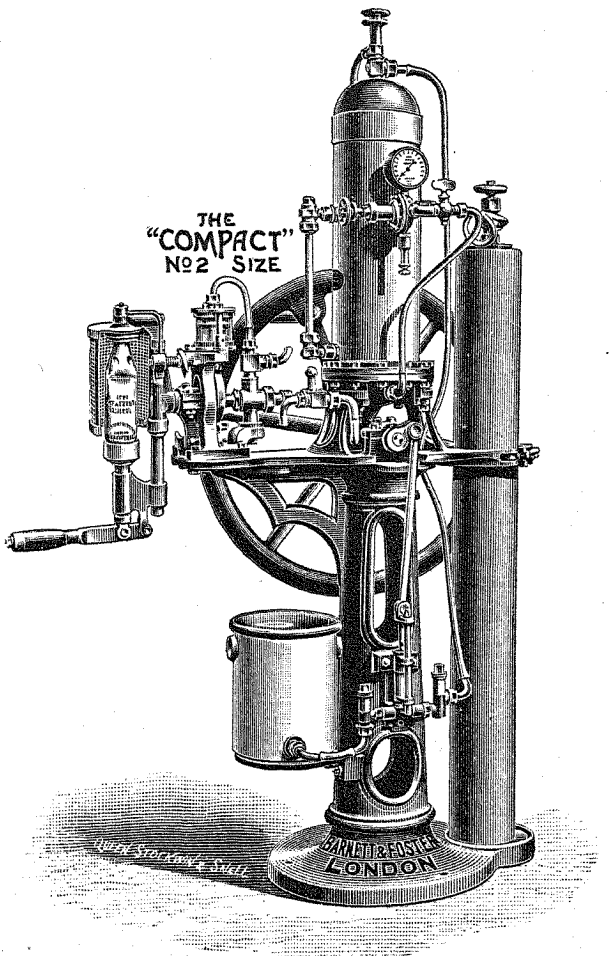
AËRATED WATERS

Soda-water seems to have been the pioneer of all other aërated waters. As to its origin Mr. William Kirkby, in his book 'The Evolution of Artificial Mineral Waters,' says:—

> It would be a matter of some difficulty to ascertain with certainty who was the first to use the name, but the evidence of contemporary records clearly points to Richard Bewley, of Great Massingham, who introduced his mephitic julep in 1767, as the one to whom is due the credit of first conceiving the idea of aërating a solution of soda with carbonic-acid gas. The earliest mention of soda-water appears about 1798, in which year Carallo refers to it as 'acidulous soda-water, as it is commonly called,' and to 'the soda-water which is now prepared and sold in London by a Mr. Schweppe c ntains an incomparably greater proportion of carbonic-acid gas.' From the forthcoming testimony it may be safely concluded that soda-water was invented in 1767, and it received its present name before 1798.

Water at the normal temperature and atmospheric pressure dissolves its own volume of carbonic-acid gas, and with greater pressure the amount of gas dissolved increases at the rate of one volume for every 30 lbs. pressure. Similarly a reduction of temperature augments the volume of gas dissolved, so that at about the freezing-point of water several volumes of the gas are readily taken up and the solution remains 'still' at that temperature, but effervesces as the water returns to the normal conditions. In practice it is not customary to introduce more

than four volumes of the gas per volume of water. The



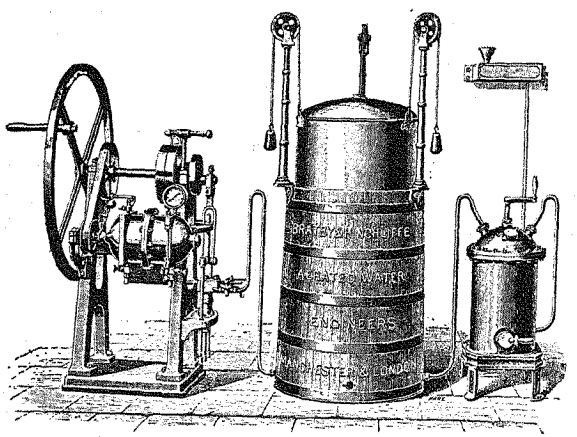
absolutely essential parts of an aërated-water plant consist of (1) a gas-generator, (2) a gasometer, (3) a saturator,

and (4) a bottler. The gas is obtained by the action of sulphuric acid upon a mixture of chalk and water or a mixture of sodium bicarbonate and water; or liquefied carbonic-acid gas may be used. The last-mentioned is obtained from natural water springs; by the complete combustion of coke; from the gases exuded in the fermentation of malt liquors; or by the action of an acid on sodium bicarbonate. The second kind of liquefied gas is that most in use in Great Britain. As the liquid is remarkably free from impurities, it is, for small makers, a convenient and economical source of the effervescing constituent of aërated waters. This gas has the distinct advantage of rendering aëration more easy, because in expansion a certain degree of cold is produced which hastens solution, since water at 40° F. dissolves 50 per cent. more gas than that at 60° F. The liquefied gas is almost confined to the production of waters on the smaller scale, and the machinery for using it is generally compact, so that it is excellently adapted for chemists.[1] A good example of machine is figured on p. 259. This embodies all that is necessary for saturating and filling water in bottles and syphons. The open pan attached to the base is called the solution-pan, to hold the filtered water or solution of potash or the like, which is to be aërated. From this pan it is pumped up into the cylinder or saturator shown behind the gauge. A few turns of the wheel serve to throw water into the cylinder, the level inside being shown by the glass gauge at the left hand of the cylinder outside. The long cylinder at the right-hand side is the tube of liquefied carbonic-acid gas. It is easily adjusted to the saturator, and when adjusted the screw-top at the head may be opened, water meanwhile being pumped in, whereby gas and water mix thoroughly, and in a few minutes the desired pressure (140 to 200 lbs.) is indicated by the gauge. Then one may begin to bottle. The bottling arrangement is shown at

[1] One pound of gas carbonates from seven to eight dozen 10-oz. bottles at 100 lbs. pressure at 40° F., and six dozen at a pressure of 130 lbs. at the same temperature. In summer, when water is rarely under a temperature of 50°, the volume of gas taken up is nearly 33 per cent. less.

the extreme left of the illustration. There are arrangements attached to it for syruping, and in the actual filling one simply puts in the bottle, shuts the cage, turns the handle with pressure, 'snifts,' and the bottle is filled. Syphon-filling requires more care and a different filler, which, however, may be attached to the machine. The makers of all machines supply full directions with them; and it is advisable to visit their factories when purchasing, so as to see the apparatus actually in operation. The objection to the use of liquefied carbonic-acid gas on the large scale is that, unless the factory is situated near the carbonic-acid gas works, the carriage of the heavy steel cylinders is prohibitive; besides, money is locked up in the cylinders, or the rent of them, if they are hired from the gas-makers, adds to the cost of the waters. Few large manufacturers use the gas in this form, but produce it themselves from chalk or sodium bicarbonate, as stated. The advantage of the soda is that the product of the action of sulphuric acid upon it is a liquid, whereas that from the chalk is a thickish paste of calcium sulphate, which is rather difficult to get rid of, some local authorities objecting to it being run into sewers, The sketch on p. 262 adequately illustrates the working with either, the machinery represented being small. The cylinder on the right is the gas-generator, made of solid lead. It is virtually a Woulfe's bottle, with safety-tube at the right side, gas-outlet tube at the left (leading to the gasometer), and acid-tube at the top. Into this cylinder or generator a milk of chalk and water (or sodium bicarbonate and water) is placed, there being a hopper at the top for the purpose. The leaden trough at the top is for holding sulphuric acid, which descends by pipe. When the tap of this is turned on the acid flows down, enters the cylinder, and at once begins to act on the carbonate. Meanwhile the crank at the top, which actuates a mixer or agitator, is turned, whereby thorough action is ensured. If gas is evolved more rapidly than it can go off by the left-hand pipe, a valve in the acid-pipe is pushed up and the flow of sulphuric acid stopped for a minute, to start again when the pressure is diminished. The gas enters the tub of the gasometer,

which is filled with water, and as it bubbles up it is washed. The bell rises as it becomes filled; from it the gas passes, when desired, by the pipe at the left into the saturator. It is here that the aërated water is made. Below the saturator is a small solution-pan into which water is automatically supplied. When the wheel is turned it works a pump, which forces the water into the saturator, and simultaneously it works an agitator within the saturator, thereby breaking up the water into a spray, thus effecting rapid solution of the gas. The pressure

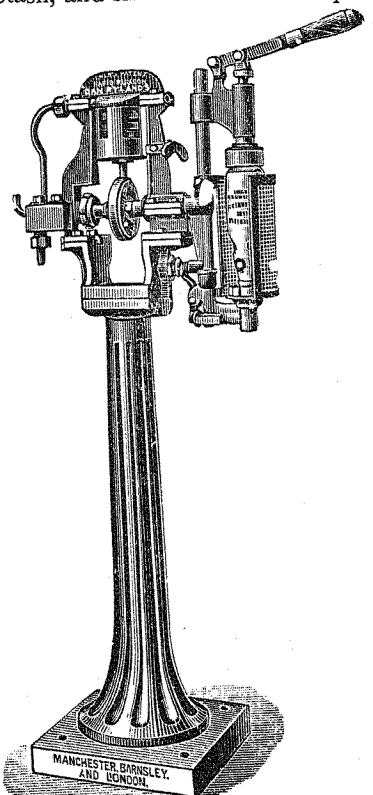


Apparatus for aërating Water

is indicated by the gauge, and if it reaches an excessive point an automatic valve comes into play, thereby ensuring safety.

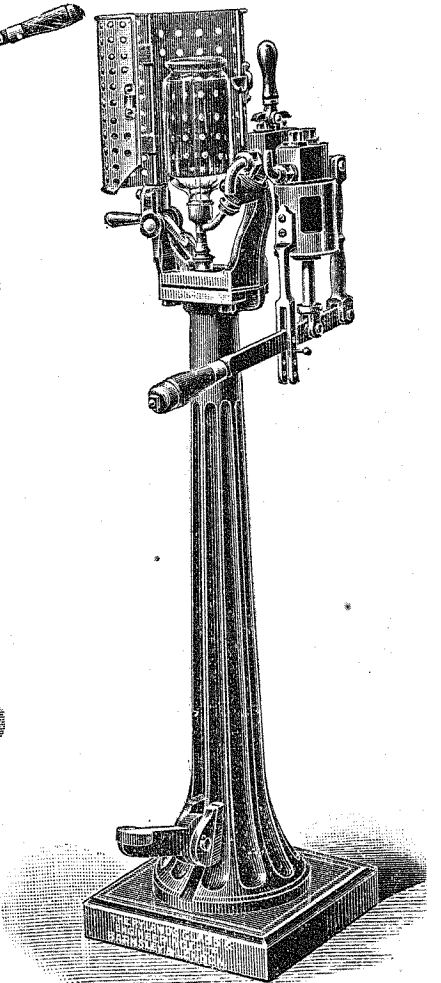
Many, indeed all but a few, manufacturers begin to use the aërated water as soon as the proper pressure is indicated, and keep the whole apparatus going simultaneously with the bottling; but the highest quality of aërated water is only obtainable by allowing gas and water to remain in contact overnight. The above sketch takes us up to this point, and the bottling still remains. We may note that in making soda,

potash, and similar waters the liquid pumped into the cylinder



Ball-stopper Bottle-filling Machine

is a solution of the required salts, but for sweetened beverages plain water is used, and the flavoured and coloured syrup is introduced by the filling-machine. This is the next part of the apparatus to be



Syphon-filling Machine

described, illustrations of the machines being on the preceding page.

In the centre of the bottle-filling machine at the top is the graduated syrup-cylinder, and at the right-hand side the bottle-holder, which is completely covered by a wire guard when the machine is in action. The syrup-cylinder is charged automatically, and when the hand-lever is moved the aërated water from the saturator rushes through it, and the sweetened liquid is swept into the bottle. When the bottle is a little more than half-filled the pressure of gas prevents more water entering; the bottler then brings the 'snifting' arrangement into action, which allows a portion of the gas to escape. For this purpose the bottle-holder revolves. The engraving of the syphon-filling machine shows the foot-lever, which fixes the syphon in the holder. The hand-lever to the right actuates the syruping-mechanism and allows the aërated water to rush into the syphon. A small lever at the left side presses the syphon-top lever, thus kèeping the syphon open during the filling-process.

It must be understood that there are many points beyond the foregoing which one has to know in manufacturing aërated waters, but we are supposed to be addressing those who know nothing about the matter, and the object of the description is to give them a general idea of the principles of the manufacture. The arrangement of the plant varies greatly in practice.

Several points in regard to materials require special attention, and we now comment upon them. The water, from whatever source obtained, must be of sparkling brightness, and remain so after aëration and filling into bottles. It is customary to filter it, and on the small scale this may be done with an ordinary service-filter, such as a 'Mawson,' 'Berkefeld,' or 'Pasteur.' Alternate layers of animal charcoal and sand are also used, but the filter must, as a rule, be adapted to the water which has to be treated.

In making soda and potash waters the required proportion of the salt should be dissolved in warm water and this solution

added to the bulk. The mixture is then well agitated, and allowed to stand for twelve hours or more in order that it may clear. Slate tanks are used when the volumes of solutions dealt with are large. The proportions here adopted are per 10-oz. bottle :—

Lithia: Carbonate, 5 gr.
Potash: Carbonate, 2 to 4 gr.
Seltzer: Powder (p. 255), 5 to 10 gr.
Soda: Bicarbonate, 5 gr.

The sulphuric acid used must be quite free from nitrous contamination, otherwise oxides of nitrogen appear in the carbonic-acid gas and destroy colours, flavours, and pungency. Some manufacturers pass all their carbonic-acid gas through scrubbers wetted with permanganate of potassium solution, so as to be doubly sure of the absence of nitrogen oxides.

SOLUBLE ESSENCES

Between 1876 and 1878 one or two well-known firms put soluble essence of ginger upon the market, but as early as 1859 the late Mr. B. S. Proctor suggested that syrup of ginger might be made clear with a partially deresinified tincture. This mixed freely with water without giving opalescence, even on acidifying. Quickly a soluble essence of lemon followed, and these two preparations still remain by far the most important of a lengthy series. They will serve to illustrate the principles upon which soluble essences are made.

Soluble Essence of Ginger.—As the result of a research in 1879 Dr. J. C. Thresh proposed the following method of making tincture of ginger 'soluble' :—

> Take of strong tincture (1 in 1) of the finest Jamaica ginger 1 pint, add in small proportions at a time finely powdered slaked lime, shaking vigorously after each addition, until the tincture ceases to lose colour, throw the whole upon a filter, and pass through the residue proof spirit until the product measures 2 pints. Now add drop by drop dilute sulphuric acid until the rich yellow colour of the tincture suddenly disappears, let stand for twenty-four hours, filter, dilute with water to 4 pints, shake with a little powdered pumice or silica (by no means lime or magnesia), and filter at 0° C. if possible.

The lime removes the two chief resins of the ginger, and

the sulphuric acid throws down the dissolved lime. Then neutral resin, wax, fat, &c., are precipitated by the water. This process is followed more or less generally, but by adhering to the details exactly we have never succeeded in getting a first-class product.

Another point deserves attention—viz., the relative strengths of gingers from different sources. Thresh found that Jamaican, which is most highly esteemed, is the weakest, yielding 0·75 per cent. of oil and 0·66 per cent. of gingerol; African gave 1·615 per cent. and 1·45 per cent. respectively; but the last-mentioned is considered to have an objectionable flavour. The principal direction in which Thresh's process requires modification is to dilute the strong tincture with its own volume of water before adding alkali. It may be suggested, Why not extract the ginger with proof spirit, seeing that gingerol is as soluble in that menstruum as in rectified spirit? It would certainly be cheaper; but ginger contains a large percentage of useless extractive matters, which are soluble in proof spirit but not in rectified spirit, and it is taken for granted that it is not desirable to extract them. At all events, most commercial soluble essences of ginger are somewhat below proof strength, and contain just about 1 per cent. of non-volatile matter; hence they are not made by exhausting the rhizome with proof spirit. An American pharmacist speaks highly of an Extract for Ginger-ale, made by percolating 16 oz. of ginger and 4 dr. of capsicum with a menstruum consisting of 64 oz. of proof spirit in which 6 dr. of potassium bicarbonate is dissolved. The bicarbonate is supposed to act as a deresinising agent, which it does not do. There is no doubt, however, that a proof-spirit tincture gives an infinitely finer soluble essence than a rectified-spirit one. The proof tincture may be used in any of the formulas noted here, but it must be made 1 in 2.

The choice of a deresinising agent is a matter of importance. Lime is undoubtedly the most effectual thing, but it is a bit too caustic. Mr. B. S. Proctor's original idea was to have a transparent ginger syrup, and he made it by precipita-

tion with hydrate of alumina formed *in situ*. Upon this principle a passable essence can be quickly made by mixing 20 oz. of tr. zingib. fort. (1 in 1 S.V.R.) with an equal volume of water containing 40 gr. of potash alum ; the mixture should be agitated for twenty minutes, then ʒvss. of liq. potassæ, B.P., added, again agitated, and allowed to settle for two hours (*days* preferably), when it may be filtered. The essence is somewhat deficient in aroma. Calcium phosphate, precipitated *in situ*, is also used in the same way, as noted below. Dr. Thresh first proposed heavy magnesium carbonate, but the essence so made becomes muddy after standing for a few weeks ; the light carbonate, in the proportion of 1 oz. to the pint of tr. zingib. fort., has not this objection. To use it, mix the carbonate with the tincture to a smooth paste in a mortar, and pour in the rest of the tincture slowly, stirring all the time. Add the water in the same way, and transfer to a bottle ; shake occasionally for six hours, allow to settle, decant the clear essence, and filter the sediment. The chief objection to this method is the loss of essence by absorption. The flavour and pungency of the essence are good, but it should be noted that one effect of the use of a bulky powder like light magnesium carbonate is that it absorbs much of the essential oil ; indeed, this is the reason why the carbonate is used in making aromatic waters. This is wherein slaked lime has the preference—a relatively smaller quantity precipitates the resins and absorbs less of the essential oil. It is best to follow Thresh's directions regarding the addition of lime, as the amount required varies with the resin of the ginger. As already stated, African ginger contains most resin, and requires three times as much lime as Jamaican, which is the great objection to it. We have not found the addition of sulphuric acid necessary when proceeding as follows :—Mix the tincture with its own bulk of water, add the lime, filter after a day ; wash the lime with a little proof spirit ; mix the two liquids. Add 2 or 3 oz. of fine sand, shake well, set aside until required, and filter. Well-washed pumice may take the place of sand. Pumice alone has been recommended for making

soluble essence of ginger, but it is quite useless for removing the inert resins, fat, &c., as it only clears the fluid of what is precipitated by water, and after that much still remains to be got out.

An excellent essence is made by the following method suggested by Mr. W. H. McGrath. Exhaust 24 oz. of bruised ginger with a mixture of 45 oz. S.V.R. 60 o.p. and 15 oz. of water by maceration and percolation. The product should be 45 oz. Mix 40 oz. of the tincture with the same of water, add sodium phosphate $\frac{3}{4}$ oz. dissolved in boiling water 5 oz., then calcium chloride $\frac{1}{4}$ oz. in water 5 oz. Shake, set aside for twelve hours, and filter. Place the filtrate in a still, and distil by a gentle heat 30 oz., which reserve.[1] Continue the distillation, rejecting the next 40 oz., and when the contents of the still are cold, rinse out with the 30 oz. of reserve. Filter this mixture, and the product is 40 oz. of essence, the aroma of which is improved by adding 20 minims of essential oil of ginger dissolved in S.V.R. $\frac{1}{2}$ oz.

Essence for Ginger-ale.—Having obtained a soluble essence of ginger, we have won half the battle in the production of essence for ginger-ale; but the other half is, if anything, the stiffer fight, the reason being that there are so many varieties of flavour appreciated by the trade. Belfast ginger-ale is distinguished from all others by a subtle flavour of cinnamon, with something suggestive of vanilla, rose, and other secondary flavours, chief of which is lemon. A fairly popular provincial ginger-ale actually contains a trace of Jockey Club, and it is not bad. Bergamot, cloves, jargonelle pear, and other ethereal compounds are also used, and a dash of good rich sherry gives an excellent flavour. The vinous rather than the flowery should be aimed at. A little capsicum

[1] It may be stated here that the superiority of some soluble essences of ginger, lemon, &c., is due to their being distilled after they have been treated with alkali. We have heard Mr. McGrath's method above described mocked by some manufacturers; nevertheless we know as a fact several brands of essences the aroma of which is a mystery to other makers, and the whole secret of these is that they are distilled. Distillation has the effect of conserving the aroma and increasing solubility.

is an almost invariable addition. The following selection of formulas gives sufficient choice :—

I

Soluble essence of ginger.	ʒx.
Tinct. of fresh lemon-peel	ʒj.
Essence of vanilla . .	♏xx.
Tincture of capsicum .	ʒj.

Mix.

II

Oil of cinnamon . .	♏x.
Oil of bergamot . .	♏xv.
Oil of lemon . . .	ʒss.
Rectified spirit . .	℥ij.

Mix, and add mag. carb. lev. ʒj. mixed with water ʒiij., filter, and add to the filtrate

Capsicin. . . .	ʒss.
Essence of apricot . .	ʒiij.
Sol. essence of ginger to .	Oj.

Mix.

III

Essence of vanilla . .	℥ss.
Spirit of cloves . .	ʒij.
Tincture of cinnamon .	ʒiv.
Tincture of lemon-peel .	℥vj.
Sol. essence of ginger to .	Oiv.

Mix.

Cinnamon may be omitted. If so, double the vanilla.

IV

Cort. cinnamom. . .	℥j.
Sem. cardamom. . .	℥ss.
Caryophylli . . .	ʒiij.
Fruct. capsici . .	ʒj.
Ess. zingib. sol. . .	Oij.

Bruise the solids and macerate in the essence for a week, shaking occasionally every day, then filter.

Colouring must be added to the whole of the foregoing—tr. croci ʒij. and sacch. ust. ʒij. to each pint is best—but if intended for personal use the colouring may as conveniently be added to the syrup. (*See also* Supplementary Chapter.)

Soluble Essence of Lemon.—The flavour of oil of lemon chiefly resides in two aldehydes, citral and citronellal (*see* p. 234), which are present to the extent of from 4½ to 7½ per cent. There is at least one other fragrant constituent in the oil, but in so small a proportion that it might be considered negligible were it not for the fact that the aldehydes, alone or mixed, do not possess the full flavour of the fresh fruit or of the oil. The greater proportion of the oil is made up of limonene, which is a terpene quite valueless for the purpose of flavouring. It is to the presence of this terpene that oil of lemon owes its poor solubility in rectified spirit. The other flavouring constituents are more soluble, and they constitute just about a twentieth of the oil—a fact to keep in mind, for it is obvious that the old proposals to make soluble

essence of lemon by the same method that produces soluble essence of ginger are quite unscientific. We have no resin to precipitate or remove by alkali, whereas the flavouring aldehydes are partly decomposed by alkalies. The first proposition in regard to soluble essence of lemon was to shake together 1 part each of the oil and slaked lime and 5 parts of rectified spirit. The result, after filtration, is a dark-coloured solution in which the odour of lemon is exceedingly poor, the aldehydes being substantially destroyed. Following upon this came the old magnesium-carbonate method, an ounce of the oil being 'killed' by stirring in a mortar with an ounce of the light carbonate, adding 7 or 8 oz. of rectified spirit, and filtering the milk immediately. A fairly soluble essence is the result, because the carbonate absorbs most of the terpenes, and along with them some of the aldehydes ; but the greater solubility of the latter in spirit always ensures that a fair proportion of them will remain in solution. Much spirit is wasted, as the filtrate rarely exceeds 5 oz.

Another process is to mix 1 part of the oil with 4 to 10 parts of rectified spirit, shake occasionally during the day, and set aside to allow the surplus oil to separate and the spirit to clear. Standing overnight suffices for this purpose. The spirituous solution is then drawn off, and on adding to syrup it is found to give a nice lemon flavour. From what has been said about the odorous principles of lemon, the small proportion in which they exist in the oil, and the relative insolubility of the terpenes, or odourless constituent, in the spirit, it will be seen that this method is thoroughly sound. It was used with success long before anything very definite about the chemical composition of lemon oil was known. The process is a rough-and-ready way of getting a solution of terpeneless oil of lemon. It is also suitable for making essence of limes.

It is well to remember that most essential oils are soluble to the extent of 1 in 500 of water, and few are less soluble than 1 in 1,000, so that 2 drops of oil of lemon would of itself dissolve in a half-pint aërated-water bottleful of water ; indeed,

lemonade syrup is also made by mixing 1 oz. of the oil with 4 to 5 oz. of powdered citric acid, and gradually adding 2 gallons of cold syrup, this being in the proportion of 2 drops of oil to 1 oz. of syrup. The syrup, however, is not clear.

Notwithstanding all these schemes, the fact remains that from the fresh fruit only are the best lemonade and first-class soluble essence of lemon made. The subjoined formulas for fresh and dried peel have long been in use, and leave little to be desired, except that they are not very strong. This objection is met by fortifying the essences with sufficient of the terpeneless oil.

I

Fresh lemon-peel (freed from the inner portion by grating)	ʒiv.
Fresh Tangerine orange-peel (ditto)	ʒj.
Rectified spirit	ʒxij.
Water	ʒviij.

Macerate four days, strain, press, and filter.

II

Dried lemon-peel (cut small)	ʒiij.
Dried orange-peel	ʒss.
Rectified spirit	ʒx.
Water	ʒx.

Macerate for a week, strain, press, and filter, and add to the filtrate terpeneless oil of lemon mx. dissolved in absolute alcohol ʒj.

Always be careful to exclude the white pulpy portion of lemon-peel in making tincture from it. It has a bad flavour and wastes spirit. The use of terpeneless oil of lemon for strengthening the flavour of the soluble essence is a course which has only to be taken once to be appreciated.

It would not be desirable, were it possible, to give formulas in this volume for even a tithe of the soluble essences offered to the trade under fanciful names. Such preparations are, as a rule, clever combinations of well-known flavours, the reproduction of which, and of new varieties, should not present much difficulty to any chemist who has at his disposal a good stock of essential oils, tinctures, and synthetic odours. We give here a few formulas as examples, and may warn the compounder to keep the *fruit* always prominent and the *flower* subsidiary, as few palates can appreciate the taste of scents. (*See also* Supplementary Chapter.)

Orangeade Essence

Fresh Seville orange-peel.	ʒviij.
Tangerine orange-peel .	ʒij.
Lemon-peel . . .	ʒj.
Proof spirit . . .	Oiij.

Prepare like soluble essence of lemon, and to the filtrate add

Essence of vanilla . .	ʒij.
Essence of cinnamon .	ɱxx.

Sarsaparilla Essence

Conc. comp. decoction of sarsaparilla . . .	ʒxij.
Oil of peppermint . .	ɱx.
Oil of wintergreen . .	ɱxij.
Oil of cloves . . .	ɱvj.
Rectified spirit . .	ʒv.
Water	ʒiij.

Dissolve the oils in the spirit and add to the water, previously mixed with a drachm of light carbonate of magnesium ; filter and add to the sarsaparilla decoction.

Hop Tonic Essence

Tincture of hops . .	ʒiv.
Tincture of chiretta . .	ʒj.
Conc. comp. infusion of gentian . . .	ʒij.
Sol. essence of lemon .	ʒij.
Caramel	ʒss.
Rectified spirit . .	ʒv.
Water to . . .	ʒxx.

Mix the tincture of hops with the same volume of water and ʒij. mag. carb. lev. Shake well for half an hour and filter. Wash the filter with 1 oz. of rectified spirit and the same of water, and mix the filtrates with the other ingredients. The addition of ol. lupuli ʒj. much improves the flavour.

Kola Essence

Fluid extract of roasted kola	ʒiv.
Tincture of canella . .	ʒss.
Tincture of orange . .	ʒij.
Essence of cherry . .	ʒiij.
Essence of cloves . .	ʒj.
Proof spirit to . . .	ʒxx.

Mix.

Hot Tom Essence

Gentian	ʒij.
Ginger	ʒss.
Orange-peel . . .	ʒss.
Capsicum . . .	ʒij.
Cochineal . . .	ʒij.
Rectified spirit . .	ʒvj.
Water	ʒxiv.

Make a tincture from the powdered materials by maceration and percolation, and add to the percolate ʒij. of caramel and ʒij. of ess. bouquet.

Lemon-squash Essence

Sol. essence of lemon (No. 1.) . . .	ʒx.
Oil of bergamot . .	ʒj.
Asbestos, in shreds . .	ʒj.

Shake together and filter.

Essence of Shrub

Soluble essence of lemon .	ʒss.
Soluble essence of orange	ʒviij.
Soluble essence of pine-apple	ʒj.
Solution of tartaric acid (7 lbs. to gallon) . .	ʒj.
Caramel . . .	a sufficiency

Mix, and after standing twenty-four hours filter.

General Flavours

which may be mixed with any medicinal tincture or colouring so as to produce some peculiar beverage :—

I

Oil of wintergreen . .	ɱx.
Oil of bitter almonds .	ɱxx.
Oil of bergamot . .	ʒj.
Essence of vanilla . .	ʒj.
Soluble essence of lemon (No. II.) to . . .	ʒxvj.

Mix and filter.

II

Essence of pineapple .	ʒv.
Essence of celery . .	ʒj.
Peruvian balsam . .	ʒiss.
Essence of vanilla . .	ʒij.
Sol. essence of lemon to .	ʒiv.

Mix and filter.

COLOURINGS

Caramel is the most important colouring matter used in the manufacture of aërated waters, being employed largely, while the appearance of the beverages greatly depends upon the nature of the caramel used. The best caramel can only be obtained from pure white cane sugar. Amongst the best sugars to use are Crossfield's, Macfie's, Martineau's, and the Glebe Co.'s granulated white sugars. It is a mistake to use inferior sugar under the idea that the colour does not matter, because the resulting caramel gives deposits in syrups. To make a pint of caramel, put 14 oz. of sugar into a copper pan, 8 inches or more in diameter, and heat the pan by means of a Bunsen or Fletcher flame turned low down so that the fusion of the sugar may proceed slowly but steadily. Stir all the time with a glass rod. Ere long the sugar begins to blacken and swell up, and as the vapour is somewhat irritating to the eyes it is advisable to conduct the operation near a window open at the top. When the sugar begins to thicken and blacken, it should be occasionally tested by putting a drop on a cold ointment-slab, and whenever one of these drops becomes brittle and looks black, the heating should be stopped. Now add carefully to the contents of the dish 8 oz. of boiling water: this should be done at first only at the rate of a few drops at a time, as there is considerable evolution of steam, the mixture being well stirred meanwhile; and as enough syrupy caramel to pour off collects, this should be poured into a porcelain dish or jug kept handy, more of the boiling water being then added, and so on. The resulting caramel, if made properly, and from a good sugar, should answer the McGrath Test,[1] viz.:—Drop 3 or 4 drops of the caramel into a test-tube, add about 1 dr. of water, mix, add 3 or 4 drops of phosphoric acid, shake well, nearly fill the test-tube with water, and mix. There should be no precipitate. The average quantity of this colour required for a gallon of syrup is 6 fl. dr., which is enough for the tint of ginger-ale.

Orange Tints are best imparted with saffron, aniline

[1] *The Chemist and Druggist*, January 7, 1893, p. 9.

orange, or similar artificial dye-stuffs. The phosphine tint requires to be darkened with caramel. Chrysoidine is a darker colour, and is obtainable freely soluble in water. Many other orange colours are available in the dry state. One ounce of the dry colour should for factory use be dissolved in a gallon of water, and a sufficiency of this added to the syrup to give the tint desired. Some orange and yellow colours become pink in presence of acids, and should be avoided.

Red Colouring.—Liquid cochineal is the best. *See* the recipes on p. 330. One of the finest reds is the natural dark colour of blackberries, also of plums. They cannot be beaten or even matched by synthetic dyes, and they are cheap. As supplies can only be got once a year, when either of the fruits is in season, the best way to preserve them is as jellies, using about four parts of crushed fruit to three of sugar, boiling and straining. The dark-red colour of cherry-juice can be imitated with a mixture of cochineal and caramel; sometimes magenta is used instead of cochineal. A little magenta with cochineal improves the colour wonderfully.

Other Colours are obtainable by judicious combinations of the foregoing, or by the use of fast aniline colours, which in small proportions are harmless. Liquorice is little used for colouring aërated beverages, because in acid solutions it is precipitated.

SYRUPS FOR AËRATED WATERS

The syrup universally used in the aërated-water trade is somewhat weaker than pharmacopœial simple syrup—viz., s.g. 1·175–1·225, as compared with the B.P. 1·330. It is made from the best granulated white sugar, and not from 'Dutch crushed' by any means. The formula for it is :—

White sugar	12 lbs.
Salicylic acid	℈iv.
Water	a sufficiency

Heat a gallon of the water to boiling, add the sugar, and dissolve by stirring. As soon as dissolved remove from the fire and allow the scum to rise; skim it off. Rub up the acid with a little water in a mortar to a cream, add a few ounces of hot syrup and transfer to the bulk; then wash out the mortar with sufficient hot water to make the syrup measure 2 gals.

The addition of a preservative to beverage syrups is not essential, but some makers add either salicylic acid or a bisulphite, such as sodium or calcium bisulphite, or sodium metasulphite. The latter are objectionable, as the sulphurous acid often helps to bleach colours and destroy odours. Saccharin may be used instead of salicylic acid, both as a preservative and as a sweetener. Formalin has been recommended and is sometimes employed, but its use is objectionable on account of its property of inhibiting the digestive power of the enzymes of the gastric juice.

Saccharin-Sugar Syrup

Saccharin	375 gr.
Sugar	15 lbs.
Water	2½ gals.

Dissolve.

Saccharin Syrup

Saccharin	2 oz. 25 gr.
Boiling water	5 gals.

Dissolve.

The use of saccharin in the manufacture of aërated beverages has increased owing to the shortage of sugar which occurred during the War. British manufacturers of saccharin can now supply all needs.

Acid Solution for syrups is made by pouring 15 oz. of boiling distilled water upon 25 oz. of citric acid, filtering the solution when sufficiently cool to handle, and making up to 50 oz. with water. Each fluid ounce of this solution represents ½ oz. of citric acid. From 3 to 5 oz. of the solution is required for each gallon of syrup; lemonade, ginger-ale, and orangeade take the largest quantity. Tartaric acid is sometimes, for cheapness, substituted for citric acid, and there are also various mineral-acid substitutes, such as phospho-citric acid, which are reckoned to be, weight for weight, equal to citric acid.

In waters which are of a tonic nature there is a distinct advantage in replacing a part of the organic acid by phosphoric acid. This adds to the medicinal value of the drink and also imparts a pleasant piquancy to the acidity. The intensity of phosphoric acid is much greater than that of citric acid, and less is required, so that the cost of the water is not increased by employing the inorganic acid (*C. & D.*, 1908, I., 335). Formic acid has also been suggested in place of a portion of the citric acid, and there is no reason why it should not be employed.

Heading is imparted to aërated beverages by means of preparations of saponin-drugs such as quillaia-bark, soap-berries, and senega. These are called by various names, such as 'Foam Extract,' 'Gum Syrup,' 'Liquid Heading,' 'Eau Savonette,' &c. Quillaia is most used, the tincture of it being made by percolation with a menstruum consisting of 1 part of rectified spirit and 3 parts of water. Strength of the tincture, 1 in 3. It is sometimes decolorised by filtration through bone-black, but saponin is now a regular commercial article purchaseable at a moderate rate, and in the proportion of 4 oz. to a gallon of 25-per-cent. alcohol is becoming much used as a foam-producer.

The following recipes show how syrups are compounded :—

Ginger-ale

Caramel	ʒss.
Citric-acid solution	ʒiv.
Ginger-ale essence	ʒij.
Syrup to	1 gal.

Mix.

Hot Tom

Soluble essence	ʒij.
Citric-acid solution	ʒiv.
Caramel	ʒij.
Liquid cochineal	ʒij.
Syrup to	1 gal.

Mix.

Jubilee Pop

Soluble essence of ginger	ʒij.
Soluble essence of lemon	ʒj.
Soluble essence of orange	ʒss.
Orange aniline	gr. v.
Cochineal-colouring	ʒss.
Tartaric acid	ʒij.
Rose-water	ʒx.
Syrup to	1 gal.

Dissolve the tartaric acid and orange aniline in the water, mix the rest of the ingredients with the syrup, and add the watery solution. Mix.

Lemonade

Soluble essence of lemon	ʒiss.
Tincture of quillaia	ʒiss.
Citric-acid solution	ʒij.
Syrup to	1 gal.

Mix.

Orangeade

Soluble essence of orange	ʒiij.
Solution of orange colour	ʒss.
Tincture of quillaia	ʒiss.
Citric-acid solution	ʒiv.
Syrup to	1 gal.

Mix.

Stone Ginger-beer

Soluble essence of ginger	ʒij.
Soluble essence of lemon	ʒj.
Solution of tartaric acid (7 oz. to 10 oz. boiling water)	ʒiiss.
Essence of cognac	ʒss.
Saponin heading (½ oz. to 20 oz.)	ʒiiss.

Mix with a gallon of syrup.

Temperance Hock

Angostura bitters	ʒij.
Essence of vanilla	ʒss.
Lemon syrup	ʒxx.

Mix.

Of these syrups 1½ oz. is used for each bottle, and the

quantity is regulated by the machine filler as required. Syrups should be perfectly clear, and if, after standing a day, they do not settle clear, they should be filtered through a felt bag.

SYPHON TRADE

This business can only be carried on profitably by looking rigidly after the syphons, for if the vendor does not look after them it is certain that a number of careless customers, who leave such matters to their servants, will let the syphons drift to the bottle dealer or, in fragments, to the dust-heap. Some chemists make a charge of *2s.* or *2s. 6d.* on every syphon as it leaves them. This practice secures safety, but it no doubt checks trade. All that is necessary, as a rule, is a strict system of account and a periodical examination of the accounts. Chemists' printers now supply books of labels for syphons, and the following are examples of labels actually in use. The first is a gummed label, one half of which is put on the syphon and the other part placed in the syphon-book :—

No. _____	*No.* _____ *Date* _____
Name _____	This Syphon must be returned within fourteen days, otherwise it will be charged *2s.*
Address _____	
_____	_____
Date _____	(NAME AND ADDRESS.)

Instead of using a counterfoil, a record may be kept in a book ruled thus :—

Nos.	Name and Address	When Lent	When Returned

The label for this system is :—

> This Syphon is lent until empty; if not returned within thirty days will be charged *2s. 6d.*
>
> LEMONADE.
>
> (NAME AND ADDRESS.)
>
> *No.* _____

Casual customers should always be asked to pay for the syphons.

ALES AND BEERS

The popular 'non-alcoholic' brewed beverages are a misnomer, as they contain alcohol; but the percentage is small—viz., 2 per cent. of proof spirit (about 1 per cent. absolute alcohol), or the equivalent of a dessertspoonful of good whisky or brandy in a bottleful of ginger-beer. According to the Revenue Acts of 1880 and 1885, 'beer' is a brewed liquor containing more than 2 per cent. of proof spirit. When this enactment came to be applied, and makers of ginger-beer were prosecuted for brewing, and retailers prosecuted for selling, ginger-beer without licences, the Government agreed to treat ginger, herb, hop, and similar beers, containing less than 3 per cent. of proof spirit, as non-excisable. And so it has remained as a rule, not a law.

The Brewing of these liquors is not a process which generally falls to the lot of the chemist, although some are noted for the quality of their 'pop.' We cannot enter here into all the details and precautions of brewing, but merely indicate briefly the general principles to be observed regarding non-excisable beers.

The 'Wort,' or saccharine solution, used for making non-excisable beers varies in strength from 8 oz. to 16 oz. of sugar per gallon. Such solutions, if fermented carefully and completely, are capable of giving liquors containing far more

than 3 per cent. of proof spirit, and if the temperature and other conditions are favourable, an excessive percentage of spirit will be produced; but it is the aim of the brewer to keep that down, and try to produce a sweet beverage. The best proportion of sugar for ginger-beer is 12 oz. to the gallon, but for hop-ales not more than half that quantity should be used.

The Ferment employed is yeast. The compressed variety should be used in preference to brewer's yeast, which is often feeble when it is purchased. Half an ounce of compressed yeast is sufficient for 10 gals. of brew. It should be mixed with a pint of the brew, and allowed to macerate at 80° F. for half an hour or an hour before adding to the bulk. The best brands of compressed yeast are generally almost free from secondary ferments; but the chief impurity of this nature is the lactic ferment, the action of which should be prevented by conducting the fermentation at the normal temperature. It is imperative for success in brewing that the process should not be conducted in an apartment where there is much dust, as there the brew is almost certain to be affected by various micro-organisms falling into it and setting up secondary fermentations, which, though slight in amount, materially alter the flavour of the beer. The ropiness of ginger-beer is due to this, the bacterium which causes it being one seldom absent from the air. The brewing-house should be a cool place with a stone floor, frequently washed by flushing; it is better, indeed, to brew in a washhouse than in one's back shop.

The temperature of the 'wort' when the yeast is added should not exceed 70° F. The brew should then be set aside in the shade at the normal temperature, the tub being covered with a clean but not airtight wooden cover. It is a mistake to use for fermentation a barrel the interior of which is only accessible through the bunghole, as one can never know when it is clean or how the fermentation is proceeding.

The liquor should not be disturbed for at least eight hours, and any time between that and twelve hours strain it through

a twill filtering-bag, and, in the case of ginger-beer, bottle immediately or rack it in casks.

Ginger-beer should be cloudy. This characteristic is obtained by boiling the ginger and other ingredients in the water. In addition to the formulas already given the following are approved methods of making the beer :—

I

Bruised Jamaica ginger	ʒiv.
Lemons . . .	4
Cream of tartar . .	ʒij.
Citric acid . . .	ʒss.
Sugar	lb. iij.
Rose-water . . .	ʒxvj.
Boiling water . .	Cong. iv.

Slice the lemons, and put them, with the other ingredients, into a suitable non-metallic vessel. Pour on the boiling water. Macerate overnight, strain, add 2 oz. of yeast and ferment eight hours. Strain again and bottle.

II

Best ginger (bruised) .	ʒiss.
Cream of tartar . .	ʒj.
Loaf-sugar . . .	lb. iss.

Put all the ingredients into an earthen vessel and pour on a gallon of boiling water ; when nearly cold add a gill of yeast, cover over with a blanket, and let it stand in a warm place till next morning. Then skim it and run through a filtering-bag, bottle, cork well, and tie down. In three days it is fit for use. A little lemon-juice is considered an improvement by some.

Both of these beers have peculiarities. The first is suitable for manufacturing purposes, and has a nice taste. The second is a formula which has been used in the family of Dr. William Hardman, Blackpool, for more than fifty years. It is sweet, and is with difficulty kept under the regulation limit of proof spirit.

Sometimes ginger-beer is made without yeast, as by the following recipe :—

Boil 6 oz. of ginger in 5 gals. of water for an hour, then add 5 lbs. of loaf-sugar, 5 oz. of lemon-juice, and 4 oz. of honey. Strain, and when cold whip up an egg with the mixture, and flavour with essence of lemon. Allow to stand for a few days and bottle.

We have examined a powder which has some repute for imparting additional body to fermented and brewed beverages, particularly ginger-beer, and getting them into perfect condition within twenty-four hours after bottling, without either fermenting or brewing. We found the composition of the powder to be—

Pulv. zingib.	ʒvj.
Pulv. gum. acaciæ	ʒij.
M.	

A teaspoonful of this is added to each gallon of beer.

The idea of making ginger-beer 'without fermentation' simply means that yeast-cells and micro-organisms from the air get into the brew and decompose sugar in the usual way.

To Stop Fermentation and preserve the beer it is necessary to add a preservative, but this should not be done within thirty-six hours after the brew is started, and only after the liquor has been strained. This particularly applies to draught ginger-beer, for which the best preservative is bi-sulphite of lime solution in the proportion of a drachm to the gallon, or 10 gr. of potassium or sodium metasulphite. For bottled beer salicylic acid 8 gr. to the gallon is better. Saccharin has also a preservative influence, but it should be used rather with the object of reducing the quantity of sugar to that required for complete vinous fermentation. The late Mr. John Pocock (author of 'Non-Exciseable Beers,' W. J. Bush & Co., Ltd., 3*s.* 2*d.*) recommended 4 oz. of sugar and 25 gr. of saccharin per gallon; but even with saccharin a preservative must be added to prevent acetous fermentation, and a sulphite is best for this.

Ginger-beer Foam.—The white of one egg added to 2 gals. of any cold acid syrup produces a rich foamy head. A heading is also imparted with quillaia, which is used as liquid extract or tincture (*see* p. 275) with or without gum arabic.

In regard to other non-excisable beers it is necessary to note that a smaller proportion of sugar is required, 12 to 16 oz. to 2 gals. being sufficient for hop-ale; but much depends upon local taste in this matter.

Hop-ale of the best quality is made direct from hops exactly in the same manner as ordinary bitter ale, with a malt and sugar wort adjusted so that the fermented liquor may not contain more than the non-excisable percentage of proof spirit. Considerable skill is required in making these beers. The quantity of hops used is 1 lb. to 12 gals. of boiling water. After standing for three hours in a covered vessel the infusion is strained through a twill bag, and in it are dissolved 7 lbs. of sugar and 1 lb. of malt extract, the whole being made up to 12 gals. with water, and when the temperature reaches 70° F.

1 oz. of compressed yeast is added. Ferment eight hours, strain, add 1 oz. of bisulphite of lime solution and a handful of isinglass finings; then rack for three days and bottle. Subjoined are another method and a formula for hop-ale essence. It is such formulas as No. 11. which we imagine most of those who use this book will require :—

I

Demerara sugar	5 lbs.
Saccharin	1½ dr.
Hop-ale essence	1½ oz.
Ginger-ale essence	½ oz.
Caramel	½ oz.
Boiling water	8 gals.
Brewer's yeast	5 oz.

Dissolve the caramel and sugar in the water, and when the temperature is reduced to 70° F. add the yeast, and at the end of six hours the essences in which the saccharin has been dissolved. Continue the fermentation overnight, strain, and bottle.

II

Tincture of chiretta	ʒiij.
Tincture of hops	ʒiv.
Essence of pineapple	ʒss.

Mix.

From 1 to 2 dr. of this essence is to be added to each gallon of the brew. Two ounces of soluble essence of ginger may be added to the above formula if a pungent drink is required.

For Hop-stout add ½ oz. of caramel and the same of liquorice-juice to each gallon. (*See also* Supplementary Chapter.)

Herb or Botanic Beer is now largely a home-brewed article, and all that the public want from chemists for it is a herb-beer extract. Subjoined are two reliable recipes. We purposely withhold several others made from the crude drugs, the manipulation of which is far too tedious for retailers :—

I

Extract of chamomile	ʒiij.
Extract of dandelion	ʒiv.
Extract of gentian	ʒiv.
Extract of horehound	ʒij.
Extract of liquorice	ʒviij.
Hop-ale essence	ʒiij.
Salicylic acid	℈iv.
Glucose syrup	Oiv.
Caramel	ʒxij.
Water to	Oviij.

Boil 2 pints of distilled water and add to it all the extracts except the chamomile, stir, and continue the heat until dissolved; then remove from the fire, add the extract of chamomile and salicylic acid, dissolve, and cover the solution until cold. Strain through twill, add the syrup and caramel, make up to a gallon with water, set aside for several days and decant.

II

Ext. lupuli	ʒij.
Ext. chamomillæ	ʒss.
Ext. taraxaci	ʒj.
Aquæ	ʒviij.

Rub down the extracts with the water, add boric acid ʒij., and bring

the solution to the boil. Close the vessel until cold, strain, and add

Dec. sarsæ co. conc.	ʒiij.
Sacch. ust.	ʒij.

Then dissolve—

Ol. gaultheriæ	♏vj.
Ol. cinnamomi	♏v
Gingerini	♏x.
S.V.R.	ʒj.

Add to the mixture, and make up to 20 fl. oz. with treacle.

Four-ounce bottles of herb extract generally retail at *6d.*

HERB BEER EXTRACT.

For making a most delicious

TEMPERANCE BEVERAGE.

TONIC, REFRESHING, AND NON-INTOXICATING.

It is prepared from Herbs known for their Purifying and Strengthening Properties, viz. Hops, Dandelion, Chamomile, Queen of the Meadow, Sarsaparilla, Horehound, and other agreeable tonic herbs.

Directions for Use.—Add two tablespoonfuls of the EXTRACT to 1½ lb. of loaf-sugar (more or less according to taste), pour over them 1 gal. of boiling water and stir until dissolved; then add 1 gal. of cold water and two tablespoonfuls of brewer's barm, or ½ oz. of German yeast; let it stand in a warm place for six hours, strain through flannel, and bottle. It is ready for use in a day or two, and should be kept in a cool place.

Botanic Stout

Black malt, crushed	1 lb.
Hops	2 oz.
Water	3 gals.

Macerate for an hour, then gently heat for three hours and strain. To the strained liquor add

Demerara sugar	1½ lb.
Grains of paradise	½ oz.
Extract of liquorice	½ oz.

Boil for one hour, and add water to 3 gals.; when blood warm add brewer's yeast, and ferment for twelve hours. Skim and bottle.

Brown Robin

Bruised cassia	ʒj.
Cream of tartar	ʒij.
Table-salt	ʒij.
Water	Oj.

Boil all together for ten minutes, and transfer to a cask containing

Sugar	lb. vj.
Brewer's yeast	Oss.
Water to make	Cong. viij.

Allow to stand sixteen to twenty-four hours (according to season), pour off into a suitable vessel containing the perfume, and bottle.

A suitable perfuming mixture is

Ol. menth. pip.	ʒj.
Ol. cassiæ	ʒss.
Ol. caryoph.	ʒj.
Spt. vini rect. ad	ʒj.

Horehound Beer

Horehound	lb. j.
Ginger	ʒiv.
Water	Cong. v.

Infuse for four hours, strain, and in the infusion dissolve

Sugar	lb. vj.
Liquorice-juice	lb. j.

Make up to 10 gals. with water, and add

Oil of peppermint	♏vj.
Oil of lemon	ʒj.
Essence of jargonelle pear	ʒij.
Rectified spirit	ʒj.
Tincture of capsicum	ʒss.

Place in a suitable vessel, add 10 oz. of brewer's yeast, allow to ferment twenty-four hours, strain, and bottle.

Root-beer Extract

Root-beer is an American drink, equivalent to our herb beer, but differing in flavour, as the following formula shows :—

Sassafras, yellow dock, pimento, wintergreen, of each	ʒj.
Wild-cherry bark, coriander, hops, of each	ʒss.

Bruise and macerate six hours in

Proof spirit	ʒvj.

Pack in a percolator and add another 2 oz. of menstruum. When dropping ceases pour on a few ounces of water. Collect the first 6 oz. of percolate, and reserve; continue percolation with a pint of water, evaporate the percolate to 4 oz., and add to the first 6 oz.

Sarsaparilla-beer

Sarsaparilla-root	10 oz.
Guaiacum-wood	1½ oz.
Mezereon-root	¾ oz.
Liquorice-root	1½ oz.

Cut fine and put into a vessel holding 2 gals., and pour a gallon of boiling water on; let stand one hour, run off the liquor, and add another gallon of boiling water to the marc. Repeat till 3 gals. of liquor is obtained. In this dissolve

Saccharin	2 dr.
Tartaric acid	1½ oz.
Cream of tartar	1½ oz.

Let stand for a few hours, and strain on to sugar 4½ lbs. Stir till dissolved, and make up to 10 gals. Then add

Oil of sassafras	15 drops
Rectified spirit	2 dr.

When at the temperature of 70° add a tablespoonful of brewer's yeast; ferment overnight, and in the morning strain and bottle.

Sarsaparilla-beer Extract

Dec. sarsæ co. conc.	ʒviij.
Tr. chiratæ	ʒss.
Saffrol (or ol. sassafras)	♏xx.
Ol. cassiæ	♏xv.
Spt. rectificat.	ʒss.
Sacch. ust.	ʒiij.
Syr. glucos. ad	ʒxx.

Dissolve the saffrol and oil in the spirit, mix with the tincture, and add to the decoction; then add the caramel and syrup.

Spruce-beer Extract

Essence of spruce	ʒiij.
Sol. essence of ginger	ʒij.
Conc. decoction of sarsaparilla	ʒj.
Essence of pimento (1–20)	ʒj.
Caramel to	Oj.

Mix.

In each of these cases two tablespoonfuls makes 3 gals. of beer.

Treacle-beer

Tincture of hops	ʒss.
Sol. essence of ginger	ʒj.
Treacle	lb. j.
Demerara sugar	lb. j.
Boiling water	Cong. ij.
Brewer's yeast	ʒj.

Dissolve the treacle and sugar in the water; when cold add the flavour and the yeast, ferment four hours, strain, and bottle.

Essence of Spruce is made by dissolving 1 dr. of English oil of juniper in 3 oz. of rectified spirit and adding gradually with shaking 2 oz. of caramel.

Alcohol-determination.—To determine the amount of alcohol in herb-beer or similar preparations, take 10 oz. of the sample and distil 5 oz.; make up this distillate to 10 oz. with distilled water and take the specific gravity of the mixture at 60° F. Then compare with an alcohol table, where the percentages of proof spirit and alcohol are given opposite the different specific gravities, *e.g.* :—

Sp. gr.	Proof Spt. p.c.	Sp. gr.	Proof Spt. p.c.
0·9959	5·0	0·9978	2·6
0·9966	4·0	0·9982	2·0
0·9970	3·5	0·9987	1·5
0·9975	3·0	0·9991	1·0

The simplest and best apparatus for distillation is a glass retort and Liebig's condenser; but if these are not at hand an apparatus may be extemporised from a quart tin can. Fit this with a good cork, bored to receive a glass tube of $\frac{1}{4}$-inch bore and $2\frac{1}{2}$ feet long. Bend the tube to an acute angle 4 inches from one end by heating in an ordinary gas flame with constant turning. This tube must go through a condenser; any tin box, such as a biscuit-box or castor-oil tin, will do if two holes can be neatly made in it at opposite sides to suit the angle at which the tube dips. Put suitable corks into the holes, so that the water does not leak out, and through the corks pass the tube. Fill up the tin with cold water, and the apparatus is ready for distillation.

Galazyme, or Artificial Koumiss, may conveniently be referred to here, as it is an alcoholic non-excisable liquor prepared by fermentation. The best method of making is as suggested by the late Mr. Adam Gibson, viz. :—

Skimmed cow's milk	Oviiss.
Water	Oiiss.
Brewer's yeast	℥j.
Loaf-sugar	℥iij.
Milk-sugar	℥v.

Dissolve the loaf-sugar in 20 oz. of water and mix with it 75 oz. of the milk; add the yeast, stir, and set aside in a warm place (75° to 80° F.)

for six hours, or until small bubbles appear on the surface. Then dissolve the milk-sugar in the rest of the water and add it, along with the rest of the milk, to the brew. Mix, strain, and bottle, tying the corks well down.

Artificial koumiss is used as a remedy and food in cases of obstinate vomiting, diarrhœa, and debility. When prepared as above directed it is a worthy representative of kefir koumiss, and contains about 2 per cent. of proof spirit. It should be put up in Apollinaris-water bottles, and kept in a cool place for six days, shaking occasionally. By this time it will have become a pleasant foaming beverage, with a slightly acid taste. After this it becomes gradually unfit as a beverage for healthy persons, but up till the thirtieth day it is a valuable medicinal agent, though not so pleasant to drink. The galazyme may be ripened in two or three days by keeping the bottles at a temperature of about 70° F.

CORDIALS

The preparation of these liquors trenches upon fiscal ground, as any of them which contain more than the permitted 3 per cent. of proof spirit may not be sold retail without a licence, nor may such preparations as these or soluble essences be made for sale without a compounder's licence. This observation is introduced here as a caution, so that those who are not posted on the matter may satisfy themselves as to the legality of their proceedings before beginning.

For chemists' retail the non-excisable representatives of the 'sweets' type (anise, peppermint, &c.) should be made, and when neatly put up in white-glass syrup-bottles, nicely capsuled and suitably labelled, no stock article makes the counter-case look brighter in the winter or sells itself more quickly. A fine peppermint cordial without any appreciable amount of alcohol is obtained by dissolving a small quantity of menthol in rectified spirit and adding syrup until the required strength is obtained. A little menthol goes a very long way. A handsome clove cordial is obtained by digesting bruised cloves in syrup until a ruby red colour is produced, and then adding a small quantity of ol. caryoph. dissolved in S.V.R. ; but

for strict practice the following formulas should be adopted to ensure uniformity.

Anise Cordial

Ol. anisi	ʒiss.
Spt. rectificat.	ʒiij.
Mag. carb. levis	ʒiij.
Aq. ad	Oiv.

Dissolve the oil in the spirit and pour into the water previously mixed with the magnesia, shake occasionally, and in four hours filter. Then place in a large funnel over two layers of twilled cotton 6 in. square

Sacch. alb.	lb. iv.

Percolate the filtrate through this until the whole of the sugar is dissolved, and make up to 1 gal. with B.P. syrup.

In a similar manner are made

Cinnamon Cordial, with ʒij. caramel per gallon.

Clove Cordial with ʒij. caramel per gallon.

Peppermint Cordial, which should be tinted slightly green with chlorophyll.

The essential oils are used in each case, and in the same proportion as anise.

Another Cinnamon Cordial

(*Used as a Harvest Drink*)

Essence of cassia (1 in 7)	ʒj.
Tincture of capsicum	ʒj.
Pour upon	
Sugar	lb. iv.
And dissolve in	
Water	Cong. j.

Ginger Cordial

(*Non-excisable*)

Soluble essence of ginger	ʒij.
Tincture of capsicum	ʒj.
Tincture of cloves	ʒj.
Tincture of cinnamon	ʒij.
Caramel	ʒiss.
B.P. syrup	Ovss.
Water to	Cong. j.

Mix.

(*Excisable*)

Ginger (bruised)	ʒviij.
Rectified spirit	Oj.
Water	Oj.

Percolate and continue percolation with

Sherry	Oij.

To the percolate add

Caramel	ʒij.
Thin syrup	Oxij.

Mix.

Lime-juice Cordial

I

Glucose syrup	8 gals.
Cane-sugar	108 lbs.
Water	20 gals.
Lime-juice	18 gals.
Oil of orange	ʒiv.
Oil of nutmeg	ʒiv.
Salicylic acid	ʒij.
Rectified spirit	ʒx.

Dissolve the sugar in the water by heat, add the lime-juice and glucose syrup. Dissolve the oils and the acid in the spirit, mix with the cordial, and filter through a felt bag.

II

Boric acid	ʒij.
Citric acid	ʒij.
Sugar	lb. iij.
Water	Oij.

Dissolve by the aid of heat. When cold add

Lime-juice	ʒxxx.
Tincture of lemon	ʒij.
Water to	Cong. j.
Caramel	to colour

Rum Shrub

(*Excisable*)

Fresh orange-juice	Oiv.
Sugar	lb. viij.

Clarify the juice by filtration

and dissolve the sugar in it. When cold add

Rum . . . . Cong. iss.

Fine with 1 dr. of isinglass softened with water.

Orange Cordial

Sugar . . . . lb. ij.
Water . . . . ʒxxvj.

Dissolve by heat and add

Orangeade essence . . ʒj.
Citric acid . . . ʒss.
Orange-flower water . ʒiij.
Caramel . . . . ʒj.

Previously mixed and filtered.

Artificial Lemon-juice

I

Citric acid . . ʒix. gr. xxvj.
Distilled water . . ʒxv.

Dissolve and add

Oil of lemon . . . ɱij.
S.V.R. . . . . ʒij.

Mix.

Tincture of lemon-peel gives a better flavour. Each ounce of this contains 36 gr. of citric acid.

II

Acidi citrici . . . ʒij.
Tr. limonis recent. . . ʒiss.
Aquam ad . . . ʒiij.

M.S.A.

Lemon Squash

Sugar . . . . lb. ij.
Citric acid . . . ʒj.
Water . . . . ʒxxviij.

Dissolve and add the following, previously prepared :—

Salicylic acid . . . ʒss.
Oil of lemon . . . ʒss.
Tincture of lemon-peel . ʒj.
Tincture of turmeric . ʒss.
Caramel . . . . ɱxx.

Shake up the tincture of lemon with the oil now and then during four hours ; allow the oil to separate, decant the tincture from it, mix the tincture with the other ingredients, and filter.

WINE ESSENCES

The trade which chemists do in essences for producing home-made wines is considerable, and though much of the essences comes from skilled manufacturers, many retailers put up their own preparations. The compounding of the essences was carried on without restriction until 1893, when the Excise authorities commenced to warn chemists against compounding any essence containing more than 3 per cent. of proof spirit without a compounder's licence, or selling such essence without a spirit-licence. This warning applied particularly to ginger-wine essence, and it led to considerable disturbance in the trade and correspondence with the Board of Inland Revenue, which ultimately resulted in the Board informing a correspondent (*C. & D.*, June 17, 1893, p. 838) that they 'would not interfere with the manufacture and sale of ginger-

wine or raspberry-wine essences without licence when intended for temperance and summer beverages, on condition that the percentage of vegetable acid (tartaric and citric) is not less than the percentage of proof spirit contained in the mixture.' Subsequently (*C. & D.*, July 22, 1893, p. 128) this permission was extended to *any* essence. The first of the following formulas for ginger-wine essence contains double the percentage of proof spirit that there is of acid, so it cannot be compounded or sold without a licence. The other formulas involve no risk.

Ginger-wine Essence

I

Tincture of ginger (1 to 4)	ʒiv.
Tincture of capsicum	ʒiij.
Tartaric acid	ʒvj.
Caramel	ʒij.
Water to	ʒiv.

Mix.

Directions for Use.—Boil 4 lbs. of loaf-sugar in 5 wine-quarts of water (125 oz.), strain through cotton, and when cold add the above quantity of essence. Shake well and bottle.

II

Gingerin	℈j.
Capsicin	gr. vj.
Rectified spirit	ʒij.
Glycerine	ʒiss.
Caramel	ʒij.
Tartaric acid	ʒss.
Syrup	ʒiij.
Orange-flower water to	ʒx.

Put the capsicin and gingerin into a mortar and triturate with the spirit; then stir in the glycerine, next the caramel and syrup. Dissolve the acid in the orange-flower water (previously brought to the boil), and finally add this solution to the mixture.

To be put up in 4-oz. bottles, the contents of which, with 2 lbs. of sugar and 2 winebottlefuls of water, will make ginger-wine.

III

Gingerin.	gr. xxxvj.
Capsicin.	gr. ij.
Spt. rectificat.	ʒiv.
Aq.	ʒiv.

Dissolve the gingerin and capsicin in the spirit and the water, filter, and add to the following solution:—

Acid. tartaric.	ʒviij.
Sacch. ust.	Oj.
Aq.	ʒvij.

Mix.

This also is non-excisable. Two ounces of it is used in the same manner as No. II.

IV

Gingerin	℈vij.
Capsicin	ʒiss.
Glycerine	ʒviij.
Syrup	ʒviij.
Caramel	ʒiv.
Tartaric acid	ʒvj.
Water to	ʒlxxij.

Mix.

Directions.—Dissolve 3 lbs. of loaf-sugar in 3 pints of water by boiling, and make up to 1 gallon with water. To this add 4 oz. of the essence.

V

Sol. ess. of ginger	ʒiij.
Sol. ess. of capsicum	ʒij.
Sol. ess. of lemon	ʒj.
Citric acid	ʒxviij.
Caramel	ʒxviij.
Chloroform-water	ʒxL.
Water to	ʒxcvj.

Mix.

To make the wine, add 4 oz. of the essence to a syrup consisting of 4 lbs. of loaf-sugar dissolved in 4 winebottlefuls of water.

Black-currant Wine Essence

Essence of black currant	ʒviij.
Vanillin	gr. iv.
Gingerin	gr. v.
Tartaric acid	ʒiiss.
Caramel	ʒij.
Salicylic acid	℈ss.
Water	ʒiij.
Syrup to	ʒxvj.

Triturate the salicylic acid, vanillin, and gingerin with the essence gradually added. Dissolve the tartaric acid in the water, add the caramel and the essence mixture, and make up to 16 oz. with syrup. Set aside for a few days and decant. [ʒij. to a quart of thin syrup.]

Cherry-wine Essence

Essence of cherry	ʒviij.
Essence of almonds	ʒij.
Vanillin	gr. iv.
Salicylic acid	℈j.
Tartaric acid	ʒij.
Cochineal colouring	ʒj.
Caramel	ʒj.
Water	ʒiij.
Syrup to	ʒxvj.

Prepare like the preceding essence. [ʒij.]

Red-currant Wine Essence

Prepare in the same way as the black-currant, but with essence of red currant and liquid cochineal instead of caramel. [ʒij.]

Damson-wine Essence

The same as cherry, but with essence of damson ʒviij.

Orange-wine Essence

Oil of sweet orange	♏xv.
Essence of vanilla	ʒij.
Tincture of orange	ʒiss.
Tincture of lemon	ʒss.
Tartaric acid	ʒij.
Salicylic acid	ʒss.
Orange-flower water	ʒij.
Caramel	ʒiij.
Syrup to	ʒxvj.

Prepare as before directed. [ʒij.]

Port-wine Essence

Acetic ether	♏xx.
Œnanthic ether	♏xx.
Spirit of nitrous ether	ʒss.
Tincture of orange	ʒiij.
Conc. decoction of logwood	ʒss.
Glycerine	ʒss.
Tartaric acid	ʒiij.
Syrup to	ʒiij.

Mix.

Sufficient for a winebottle of sweetened water.

Raspberry-wine Essence

Essence of raspberry	ʒj.
Tincture of capsicum	ʒj.
Liquid cochineal	ʒiij.
Acetic acid, B.P., to	ʒiv.

Mix. [ʒij.]

A fair essence for the above formula may be made by macerating 4 oz. of bruised orris-root in a mixture of 10 oz. of S.V.R. and 6 oz. of water for seven days. Filter, and colour with caramel.

Sherry-wine Essence

Omit the logwood from port-wine essence, and colour with caramel.

Other Essences

The cherry essence is a good standard to go by for other fruit-wine essences, using cochineal or caramel, or both, for colouring according to the nature of the wine.

MEDICATED AND MEDICINAL WINES

The preparation of medicated wines is not subjected to fiscal supervision, but the British Revenue authorities do not permit such preparations to be sold by retail without a licence unless they contain certain proportions of active ingredients; for example, B.P. quinine-wine containing 1 gr. of quinine hydrochloride in the fluid ounce, and coca-wine containing ½ gr. of cocaine with a proportionate amount of extractive in each ounce, are considered to be medicinal and saleable by *bonâ-fide* chemists without a wine-licence. So also are vin. antimonialis B.P., vin. ferri B.P. (if containing 1 gr. of iron per oz.), and vin. ipecacuanhæ B.P. Generally it may be said that the authorities do not regard as medicinal wine any which is not rendered unpalatable, or otherwise unsuitable as a beverage.

So far as the manufacture of these wines is concerned, the chief point to note is that port and sherry wines, which are in a majority of cases used for making them, contain free tannic acid, and as tannin precipitates many active principles it is desirable to avoid it or get rid of it. Detannated Sherry and Orange Wines are not so objectionable. They are made by macerating ¼ oz. of finely cut gelatin in a gallon of the wine for fourteen days, shaking daily, and at the end of the period decanting. Another method is to dissolve 1 dr. of white gelatin in 10 dr. of water, and add to a gallon of sherry. Set aside for a week and filter. The objection to the latter method is that some of the gelatin remains in solution. Red wines cannot be detannated without removal of the colour. In this case new port, Tarragona port, or Malaga should be used. A good quality of port, admirably suitable for the purpose, can be obtained at from 6*s.* to 8*s.* per gallon. In the subjoined formulas where 'port wine' is prescribed Tarragona, true port, or Malaga wine may be used. The best way to make these wines non-excisable is to add 1 gr. of quinine hydrochloride to each ounce. The wines may also be made with detannated sherry or Malaga.

Beef-and-Malt Wine

Extract of beef	ʒiv.
Extract of malt	ʒviij.
Glycerine	ʒij.
Port wine	Cong. j.

Rub down the extracts with the glycerine and a pint of the wine, then add the rest of the wine. Shake, set aside for fourteen days, decant, and filter the sediment.

Beef-and-Iron Wine

Extract of beef	ʒiv.
Ammonio-citrate of iron	ʒv. ℈j.
Port wine	Cong. j.

Proceed as in making beef-and-malt wine, but dissolve the citrate in 2 oz. of warm water, and add the solution to the wine.

American Beef, Iron, and Wine

Ammonio-citrate of iron	ʒiiiss.
Water	ʒxx.
Aromatic elixir	Cong. j.
Extract of beef	ʒiv.
Marsala to	Cong. v.

Dissolve, and let stand in a demijohn exposed to light, shaking occasionally, for seven days; filter through charcoal.

Cassis Cordial or Wine

(Green)

Fresh black-currant leaves	ʒvj.
Rectified spirit	ʒxxxv.
Water	ʒxxxv.
Sugar	ʒxxxv.
Orange-flower water	ʒj.

Macerate the leaves in the spirit for four days, press, and wash the marc with 17 oz. of water. Dissolve the sugar in 18 oz. of water and the orange-water; add the other liquids and filter.

(Red)

Black currants (withered on the bush)	1 pint
Brandy	4 pints
Sugar	2 lbs.
Water or wine	2 pints

Macerate the berries in the brandy for a week, dissolve the sugar in the water (or wine), add to the tincture, set aside for a week or two, and decant or filter.

Cascara Sagrada Wine

Ext. cascar. liq. misc.	ʒiss.
Sacchar. alb.	ʒiss.
Vin. xeric. detannat. ad	ʒxxx.

Mix, set aside for a week, and filter.

Dose: ʒss. to ʒj. for adults.

Cinchona-wine

Ext. cinchonæ liquid.	ʒij.
Vin. xeric. detann. ad	Cong. j.

Mix, set aside for three weeks, and filter.

May also be made with port wine. For non-excisable wine add 1½ oz. of the liquid extract to a gallon of port wine and rack for a month before filtering.

The following is a good formula for an excisable preparation:—

Fluid ext. of cinchona	75 grams
Citric acid	2 ,,
Golden syrup	100 ,,
Brandy	40 ,,
Rectified spirit	100 ,,
Malaga	700 ,,

Set aside for a fortnight or a month to settle.

Cinchona-and-Iron Wine

Dialysed iron	100 grams
Golden syrup	700 ,,
Rectified spirit	200 ,,
Cinchona wine (German)	5,000 ,,

Mix, and filter after ten days.

Glycerine may take the place of sugar or syrup with advantage.

Coca-Kola Wine

Coca-leaves . . .	℥iv.
Bruised kola-nuts . .	℥ij.
Tarragona port . .	Cong. j.

Macerate for a month and filter.

Coca-wine

(Excisable)

Coca-leaves . . .	lb. ij.
Port wine . .	Cong. iv.

Macerate for a month, shaking daily; then decant into clean jars, and set aside for at least another month. Again decant and filter the 'foots' through French grey filtering-paper.

This is the common plan for making excisable coca-wine. Standardised fluid extract of coca (miscible) may also be used in the proportion of 2 oz. (or more) to the gallon. It is important to use a new port—best quality Tarragona or Malaga wine. Fletcher's Solex Coca 3½ oz. to a gallon of Tarragona gives an excellent product after standing for fourteen days.

(Non-excisable; ℥j. = cocaine gr. ss.)

Ext. cocæ liq. . .	℥viij.
Cocain. hydrochlor. .	℈j.
Vin. rub. ad . . .	Cong. j.

Mix, set aside for four weeks, and filter.

American Coca-wine

Claret	Cong. j.
Rectified spirit . .	℥xvj.
White sugar . . .	lb. j.
Fluid extract of coca .	℥iv.
Tincture of cudbear .	to colour

Add the spirit to the claret, to fortify it, as soon as it is opened; mix with the other ingredients, shake occasionally for seven days, and filter through charcoal.

Fruit-wines

Black-currant, raspberry, strawberry, and similar wines are made as follows:—

From the ripe berries contained in a twill bag press out the juice, and to every quart of it add 2 quarts of water with 2 lbs. of sugar and 3 dr. of tartaric acid dissolved in it. To every quart of the liquid add 1 dr. of the best compressed yeast. The liquid should be put into a clean barrel filled to the bung-hole, which should be large and closed simply by a flap of canvas. Keep at a moderate but even temperature (say, 60°–65° F.) for six weeks, and then draw off into another vessel, and keep it there for from six to eight weeks longer, when it will be ready for bottling.

Ginger-wine

Loaf-sugar . . .	lb. xviij.
Water. . . .	Cong. vj.
Rinds of 7 lemons.	
Rinds of 2 Seville oranges.	
Bruised ginger . .	℥viij.
Raisins . . .	℥iv.

Boil for an hour, skim carefully, and pour into a suitable non-metallic vessel. Next day add the juice of the lemons and oranges and 1 oz. of isinglass; strain and add 2 tablespoonfuls of yeast. Ferment three days and close the vessel (a cask preferably, which may be bunged). Set aside for six weeks, strain into another cask, and four weeks later the wine will be ready for bottling. A pint of brandy is sometimes added.

Orange-wine

(Fermented)

Loaf sugar . . .	lb. xxiij.
Water	Cong. x.

Dissolve by boiling and skim carefully. Pour the boiling syrup upon the rinds of 100 oranges, add the juice of the fruit, and allow to

stand overnight. Add 6 oz. of yeast, ferment three days at a temperature of 65° to 70° F., then strain into a barrel and bung loosely. Add 2⅔ pints of brandy and rack for four months, when the wine is ready for bottling. Less brandy may be used, in which case 5 gr. of salicylic acid per pint should be added. [Fermented wines cannot be made in the United Kingdom without a licence.]

(Unfermented)

Oil of orange	ʒj.
Tincture of orange	ʒviij.
Rectified spirit	ʒiv.
Tartaric acid	ʒviij.
Salicylic acid	ʒiij.
Loaf-sugar	lb. vj.
Caramel	ʒiij.
Water	Cong. viij.

Dissolve the oil of orange in the spirit, and pour upon the sugar contained in a large funnel. Pass through this a sufficiency of the water to dissolve, add the rest of the water containing the tartaric acid, then the caramel, and finally the tincture containing the salicylic acid. Set aside for a fortnight and filter if necessary.

Kola-wine

Fresh kola-nuts, bruised	ʒvj.
Port or sherry	Cong. j.

Macerate for a week and filter.

May also be made from dried and roasted nuts, the resulting preparation having a finer flavour. A little true cinnamon and vanilla further improve it.

Pepsin-wine.—Many formulas for this preparation do not recognise the fact that the pepsin requires to be treated with a dilute acid previous to being mixed with the menstruum; and, further, that the menstruum should not contain more than 10 per cent. of alcohol, as an excessive amount of alcohol precipitates pepsin. Only the best quality of pepsin should be used, preferably scale pepsin. The powder pepsins generally contain insoluble matter. Glycerine of pepsin may be used in proportionate quantity. Use also detannated sherry.

I

Pepsin. porci	gr. CLX.
Acid. hydrochlor. dil.	♏CLX.

Dilute the acid to 1 oz. with water, and pour on the pepsin in a 24-oz. bottle; allow to remain so for an hour, then add

Glycerin.	ʒij.
Aquæ	ʒvij.

Macerate for two days, filter, and add sherry 10 oz., bringing up the colour with browning.

II

Soluble scale pepsin	ʒv. ℈j.
Distilled water	ʒiij.
Glycerine	ʒij.
Strong hydrochloric acid	ʒij.
Detannated sherry, B.P.C., to	Oj.

Mix together the acid and the water, and dissolve the pepsin in the mixture; then add the glycerine and the sherry, and after three days filter.

In 1890 the British Revenue authorities prohibited the sale

of pepsin-wine without a licence unless it contains 320 gr. of pepsin and 120 minims of strong hydrochloric acid in each pint.

Senna-wine

Alexandrian senna . .	ʒiij.
Sherry	℥xxxv.

Macerate for a week, press, and strain. To the strained liquor add gelatin 5 gr. dissolved in water ʒiiss. ; then the following :—

Tincture of orange . .	ʒj.
Tincture of ginger . .	ʒss.
Aromatic tincture . .	ʒiss.
Honey	ʒij.

Allow to stand eight days and filter.

Excellent for hæmorrhoids. Dose : ʒss. to ʒj. or more.

Quinine-wine

(The original formula of Dr. G. F. Collier)

Quinine sulphate . .	gr. xxiv.
Lemon-juice (or sol. acid. citric. ʒiss. to Oj.) .	ʒiij.
Orange wine . .	℥xxv.

Mix.

An excellent wine for preprandial use may also be made with sherry and quinine hydrochloride in the foregoing proportions.

Rhubarb-wine

(Artificial)

Comp. tincture of rhubarb	ʒss.
Essence of port . .	ʒiss.
Essence of cognac . .	ʒiij.
Essence of vanilla . .	ʒj.
Essence of lemon . .	ʒij.
Aldehyde . . .	mxv.
Citric acid . . .	ʒij.
Salicylic acid . . .	℈ij.
Syrup	Oiv.
Water to . . .	Cong. j.

Mix.

Vino Vermouth

(The genuine formula according to the French Academy)

Wormwood . . .	ʒiv.
Gentian	ʒij.
Angelica-root . .	ʒij.
Blessed thistle . .	ʒiv.
Calamus aromaticus .	ʒiv.
Elecampane-root . .	ʒiv.
Centaury-leaves . .	ʒiv.
Germander-leaves . .	ʒiv.
Nutmegs . . .	No. xv.
Oranges, sliced . .	No. vj.
Rectified spirit . .	Oix.
Sweet white wine .	Cong. xx.

Macerate for fifteen days and filter.

This may be made into a liqueur by adding 25 per cent. of sugar.

Medicated-wine Essences.—Many chemists object to taking out an 'off' wine-licence, or their businesses may not be of dimensions to warrant this addition to their expenses. To such the selling of essences for compounding the various wines can be made a 'profitable extra,' and save the turning away of customers. It should also be borne in mind that there are a good many people who prefer to make their own medicated wines.

Beef-and-Iron Wine Essence

Liq. carnis . . .	ʒvj.
Ferri ammon. cit. . .	ʒj.
Aq. chloroformi ad . .	ʒviij.

Dissolve the ferr. amm. cit. in the aq. chlorof. and mix with the liq. carnis.

ʒj. panel-flats sell at 1*s.*

It should be noted that although this formula produces a cloudy wine, it yields a product possessing superior nutritive qualities. 'Fluid beef' uncooked is to be used.

Label: 'Essence for producing Beef-and-Iron Wine, combining in one solution the nutritive and tonic properties of both beef and iron.' (Directions as for coca essence.)

Cinchona-wine Essence

Ext. cinchon. liq., B.P. .	ʒij.
Glycerini . . .	ʒiv.
Aq. ad	ʒviij.

M.

ʒj. panel-flats, 1*s.*

Label: 'Miscible Extract of Cinchona, prepared from the bark of *Cinchona Succirubra*, for making tonic cinchona-wine.' (Directions as for coca essence.)

Coca-wine Essence

Ext. cocæ liq. (miscible) .	ʒvij.
Spt. æther. nit. . .	ɱlxxx.
Glycerini, Aquæ } part. æq. ad .	ʒx.

M.

The quantity of coca extract to use in this formula has been worked out for a liquid extract containing 0·25 per cent. of cocaine. There are extracts on the market containing double this quantity of cocaine. It is obvious that only half the quantity of such an extract should be used in above formula.

Put up in 1-oz. panel-flats, to sell at 1*s.*, and label as follows:—

CONCENTRATED
ESSENCE OF COCA
(*Erythroxylon Coca*)
For making full-strength Coca Wine.

Directions.—Add the contents of this bottle to a pint of good-quality Tarragona or Port Wine.

Dose of the Coca Wine thus produced.—From a half to a whole wineglassful two or three times a day.

PREPARED BY
(Name and Address)

Kola-wine Essence

Miscible liquid extract of kola	ʒvj.
Essence of pineapple .	ɱviij.
Glycerine and water, of each equal parts to .	ʒviij.

M.

ʒj. panel-flats sell at 1*s.*

Label: 'Concentrated Essence of Kola, from the seeds of *Sterculia acuminata*, for instantly producing kola-wine.' (Directions as for coca essence.)

Formulas for many other wine-essences may be constructed on similar lines to these—as, for instance, an essence for a 'Bitter Tonic Wine,' containing gentian and nux vomica, which might well be made a profitable speciality in some districts.

Artificial-wine Essences.—The manufacture of these essences, which are for imparting the distinctive flavour of the respective wines and liquors to sweetened mixtures of spirit and water, has reached a high degree of perfection. The processes employed are well-guarded secrets, but the following formulas are a manufacturer's :—

Curaçao Essence

Oil of cassia	ʒj.
Oil of nutmeg	ʒj.
Butyric ether	ʒj.
Oil of bitter orange	ʒxj.
Rectified spirit to	ʒx.

Mix.

Essence of Gin

Oil of juniper	ʒj.
Oil of nutmeg	ʒj.
Oil of caraway	ɱvj.
Fusel oil	ɱx.
Rectified spirit	ʒxvj.

Mix.

Essence of Hollands Gin

Fusel oil	ʒiv.
Oil of juniper	ʒv.
Rectified oil of turpentine	ʒv.

Mix.

Essence of Port

Acetic ether	ʒj.
Essence of grape	ʒiv.
Essence of vanilla	ʒiv.
Tincture of kino	ʒiv.
Essence of raspberry	ʒviij.

Mix.

Essence of Rum

Butyric ether	ʒij.
Acetic ether	ʒj.
Acetate of amyl	ʒiss.
Essence of vanilla	ʒiss.
Tincture of orris	ʒij.
Rectified spirit	ʒxiij.

Mix.

Essence of Sherry

Œnanthic ether	ʒj.
Nitrous ether	ʒij.
Rectified spirit to	Oj.

Mix.

These essences may be used for making artificial-wine essences similar to those on p. 290.

BITTERS AND LIQUEURS

Some liqueurs are still proprietary, although they may have originated generations since. This is the case, for example, with Chartreuse, regarding which *The Chemist and Druggist* received in September, 1895, an official intimation that 'the process of manufacture of the liqueur de la Gde. Chartreuse has never been divulged, and that the expression "Chartreuse" applies only to the products made by the monastery of La Grande Chartreuse.' *See also* p. 301.

Angostura Bitters

This celebrated liqueur was devised in 1832 by Surgeon-General J. H. B. Siegert, of Venezuela; and the fame of it was brought to Europe in 1839 by Von Humboldt, the explorer, who had been cured of seediness by some of it that he got from Dr. Siegert. The liqueur is still made according to the original formula by Carlos D. Siegert & Brothers (sons of the originator), at Trinidad; but a similar article is made commonly in Europe, *e.g.*:—

I

Angostura bark	ʒiv.
Chamomile-flowers	ʒj.
Cardamom-seeds	ʒij.
Cinnamon	ʒij.
Orange-peel	ʒj.
Raisins	lb. j.
Rectified spirit	Ovj.
Water	Oxiv.

Macerate for a month, press, and filter.

II

Angostura bark	ʒiv.
Cinchona-bark	ʒij.
Bitter-orange peel	ʒij.
Galangal-root	ʒx.
Cinnamon	ʒx.
Cassia-buds	ʒx.
Red sandalwood	ʒx.
Cardamom-seeds	ʒss.
Gentian-root	ʒiij.
Proof spirit	Cong. j.
Rum	Cong. j.

Macerate for a week and in the filtrate dissolve

Sugar	lb. ij.
Oil of cognac	ɱxx.

Mix.

The second is the better formula, the first being weak in respect to the absence of cinchona, which is an essential.

Absinthe

Oil of wormwood	ʒj.
Oil of anise	ɱxv.
Oil of coriander	ɱxxiv.
Rectified spirit	Cong. j.

Dissolve and add a mixture of

Syrup	Oiss.
Water	Cong. ij.

Colour pale green with spinach or chlorophyll.

Benedictine

The following lengthy formula is given by a continental author for

Benedictine Essence

Cardamom-seeds, myrrh, and mace, of each	gr. xv.
Galangal-root, ginger, and orange-peel, of each	ʒiiss.
Extract of aloes	ʒj.
Rectified spirit	ʒvj.
Water	ʒiiss.

Macerate for a week, press, and filter. To the filtrate add

Caramel	ʒx.
Spirit of nitrous ether	ʒviij.
Solution of ammonia	ɱxv.
Vanillin sugar	gr. xv.
Liquorice-juice	ʒv.
Acetic ether	ʒj.
Coumarin	gr. iss.
Oils of lemon and bitter orange, of each	ʒj.
Oil of anise	gtt. xv.
Oil of bitter almonds	gtt. xij.
Oil of sassafras	gtt. vij.
Oil of hyssop	gtt. iv.
Oil of hops	gtt. ij.
Oil of galangal	ʒss.
Oil of wormwood	ɱxl.
Oil of ginger	ɱxv.
Oil of cascarilla	gtt. xv.
Oil of millefoil	gtt. x.
Oil of angelica	gtt. vj.
Oil of cardamoms	gtt. ij.
Oils of juniper and rosemary, of each	gtt. j.

Bring up the volume to 17½ oz.

by the addition of rectified spirit. The essence should be matured for two years before being used for the following

Liqueur

Benedictine essence	ʒj.
Rectified spirit	ʒxxiv.
Sugar	ʒxxij.
Water	ʒxx.

Dissolve the sugar in the water, and to the syrup add the essence, previously mixed with the spirit.

American Peach Bitters

Peach-kernels or bitter almonds	9 oz.
Angostura bark	4 oz.
Pale brandy or proof spirit	1 gal.

Slice the peach-kernels or almonds, &c., thin, and digest for fourteen days. Strain and add

Sugar (white)	2 lbs.
Water	2 quarts

Dissolved.

If peach-juice is procurable, 2 quarts may be added instead of the water; but, if not, sufficient citric acid may be used, with a sufficiency of the artificial essence of peach.

Anisette

Oil of star-anise	ʒv.
Oil of anise	ʒij.
Oil of fennel	♏xl.
Oil of coriander	♏vj.
Oil of sassafras	♏xx.
Tincture of orris	ʒj.
Rectified spirit	Cong. iiss.
Water	Cong. iij.
Sugar	lb. xx.

Dissolve the oils, &c., in the spirit, and the sugar in the water, and mix.

Anisette de Bordeaux

Star-anise	lb. ij.
Coriander	lb. j.
Fennel	lb. j.
Rectified spirit	Cong. ij.
Water	Oiv.

Macerate for a week, filter, and to the filtrate add 10 lbs. of sugar and ess. amygd. amar. ʒij. dissolved in 3 pints of hot water.

Bitters.—Under this name various preparations are required, but here we note those only which are used to add to wines or spirits or for pick-me-ups.

Liqueur Bitters

Quininæ sulph.	gr. xxiv.
Liq. strychninæ	ʒj.
Tr. limonis	ʒiij.
Tr. aurant. recent.	ʒiij.
Tr. croci	ʒj.
Spt. rectificat.	ʒij.
Syrup. et aquæ aa. q.s. ad	ʒvj.

Dissolve the quinine in the spirit with acid. sulph. dil. q.s. and add the other ingredients.

This sells in liqueur squares at 2*s.* 6*d.* Dose: ʒss. taken neat.

Chemists should remember that such preparations as these are not medicines, and may only be sold in the U.K. under a spirit-licence.

Orange Bitters

I

Orange-peel	ʒj.
Preserved citron-peel, gentian, and cascarilla, of each	ʒss.
Rectified spirit	ʒv.
Water	ʒxv.

Macerate for a week and filter.

II

Gentian	ʒss.
Chiretta, cusparia, ginger, and fresh lemon-peel, of each	ʒij.
Orange-wine	ʒxxxij.

Macerate for ten days and filter.

Pick-me-up Bitters

Spirit of chloroform	ʒij.
Aromatic spirit of ammonia	ʒv.
Tincture of cascarilla	ʒv.
Glycerine	ʒv.
Comp. tincture of gentian to	ʒxxx.

Dose: 1 to 4 dr.

Wormwood Bitters

Wormwood	ʒviij.
Juniper-berries	ʒij.
Cinnamon	ʒj.
Coriander	ʒj.
Rectified spirit	Oj.
Water	Oiij.

Macerate for a week and filter.

The species are sometimes wanted by publicans, who make the tincture themselves. The next two formulas are for this purpose, and we can particularly commend the second of these.

I

Cusparia-bark	ʒj.
Gentian-root	ʒij.
Cascarilla and orange-peel, of each	ʒj.
The peel of six fresh lemons.	
Cardamom-seeds	ʒss.
Cinnamon, caraway, and cloves, of each	ʒij.
Ginger	ʒj.
Socotrine aloes	ʒj.
Carbonate of potassium	gr. x.
Raisins	lb. j.
Rectified spirit	Oiij.
Water	Ov.

Reserve an ounce of water, and in this dissolve the aloes and potash; add to the rest of the ingredients and macerate fourteen days; press and filter, and make up to 1 gal. with sherry.

If the dry ingredients are to be sold, direct them to be macerated in 1 gal. of 10 u.p. whisky.

II

Rad. gentianæ	ʒxvj.
Sem. coriandri	ʒxvj.
Rad. calam. arom.	ʒiv.
Rad. sassafras	ʒiv.
Sem. carui	ʒiv.
Cort. cassiæ	ʒiv.
Caryophylli	ʒij.
Aloes capensis	ʒj.

Sufficient for 20 gals. of whisky.

Carmel Monks' Liqueur

Angelica-root	ʒiij.
Aniseed	ʒxj.
Lemon-peel	ʒvj.
Coriander-seed	ʒx.
Nutmeg	ʒviij.
Fresh marjoram leaves and flowers	ʒvj.
Fresh melissa-leaves	ʒL.
Cloves	ʒx.
Fresh sage leaves and flowers	ʒxiv.
Fresh thyme	ʒvj.
Fresh hyssop	ʒvij.
Cinnamon	ʒx.
Proof spirit	Cong. xiij.

Macerate for three days, then distil 10 gals., and to the distillate add 10 gals. of simple syrup (1 in 2).

Cocoa Liqueur

Caracas cocoa	ʒxxiv.
Vanilla	ʒss.
Brandy	ʒxxxij.

Macerate for fourteen days, strain and press; treat the marc with

Warm water	ʒxxxij.

When cold filter, and in the filtrate dissolve

Sugar	ʒxxxvj.

Mix with the brandy.

Chartreuse.—The secret of the manufacture of this famous liqueur has been exceedingly well guarded. The House of Lords (*C. & D.*, 1910, I., 466) has decided that the Carthusian monks alone possess the secret process or recipe, and the use of the word 'Chartreuse' in England by others is prohibited. The peculiar flavour of the liqueur was wont to be attributed to the rare herbs which grew around the monastery at Grenoble (where the monks no longer reside), and a Duren professor of botany thought he had discovered *the* herb whose flavour has eluded the nose and palate of every imitator, but the professor did not say what it was. The fact remains that those who have visited the monastery, and have been shown the distillery, have come away as wise as when they entered. One man who went there tells us that in the distillery 'great copper alembics were at work distilling the infusion of plants. On a shelf high above was a great basin full of syrup, which is a secret as much as the infusion itself. When ready the syrup and the infusion flow into the great casks that line the cellars. There are sixty of these casks, and each one holds about 3,000*l.* worth.' We give some of the attempts which have been made to hit the composition of the liqueur, which, by the way, is made green, white, and yellow. There is also a medicinal elixir which differs in composition from the after-dinner liqueurs.

	Green		White		Yellow
Alpen artemisia	ʒv.		ʒiiss.		ʒiiss.
Angelica-seeds	ʒiiss.		ʒiiss.		ʒiiss.
Angelica-root	ʒx.		ʒv.		ʒiiss.
Arnica-flowers	ʒiiss.	Calamus	ʒv.	Arnica	ʒiiss.
Poplar-buds	ʒiij.	Cardamoms	ʒv.		ʒv.
Chinese cassia	ʒiiss.		ʒij.		ʒiiss.
Hyssop	ʒvj.		ʒiiss.		ʒiij.
Nutmeg	ʒiiss.		ʒiiss.		ʒiiss.
Lemon-scented melissa	ʒx.		ʒv.		ʒv.
Peppermint	ʒv.	Cloves	ʒv.		ʒiiss.
Thyme	ʒv.	Tonka bean	ʒiss.	Coriander	ʒxxx.
Rectified spirit	Ox.		Ox.		Ox.
Water	Ov.		Ov.		Ov.
	Colour green			Aloes	ʒss.

In each case macerate for fourteen days, then press and filter or distil. The essence is sufficient for making 125 pints of liqueur with equal parts of syrup (1 in 2) and rectified spirit.

The following are simpler formulas :—

I

Oil of angelica	♏xx.
Oil of cajuput	♏ij.
Oil of calamus	♏j.
Oil of cloves	♏ij.
Oil of coriander	♏ij.
Oil of hyssop	♏iij.
Oil of mace	♏iij.
Oil of melissa	♏iij.
Sugar	℥v.
Rectified spirit	Oj.
Water	℥x.

Dissolve the oils in the spirit and the sugar in the water, mix, and colour yellow with tincture of saffron or green with chlorophyll.

II

Oil of melissa	♏vj.
Oil of angelica	℥ss.
Oil of cloves	♏vj.
Oil of peppermint	♏xl.
Oil of hyssop	♏vj.
Oil of nutmeg	♏vj.
Oil of cinnamon	♏vj.
Rectified spirit	Cong. j.
Sugar	lb. viij.
Water to	Cong. iiss.

Mix and colour yellow or green as desired.

For diabetic persons this and other liqueurs may be sweetened with saccharin in the proportion of 1 gr. to the ounce.

Cherry Brandy

Mash ripe cherries and press out the juice through a horsehair bag; set aside for a few hours to settle, and decant the clear liquor. To each quart of juice add 1 quart of brandy, a thick syrup of 12 oz. of sugar, and the rind of a lemon sliced. Set aside for two months and filter bright. Should not be used for twelve months. The cordial is also made by covering ripe black cherries, contained in a jar, with brandy.

Crême de Panama

Lemon-peel	℥iiss.
Unripe-orange peel	℥x.
Chocolate	℥x.
Cinnamon	℥v.
Vanilla	℥ss.
Saffron	℥iss.
Rum	℥xxv.

Macerate for a week and strain. Reserve the rum, pack the marc in a percolator, and pass through 20 oz. of rectified spirit; mix the liquids, add rectified spirit 150 oz. and syrup (1 in 2) to 500 oz. Colour with caramel if desired.

Cheshire Cordial

Cinnamon and cloves, of each	℥vj.
Nutmeg and ginger	℥j.
Candied lemon and citron	℥j.
Blanched sweet almonds	℥ij.
Blanched bitter almonds	℥ss.
Lemon-juice	℥j.
Calf's-foot jelly	℥vj.
Orange marmalade	℥ij.
Coriander and caraway seeds, of each	℥ss.
Damson jelly	lb. ij.
Proof spirit	Ovj.
Sherry	Oiij.

Beat the almonds together, add 3 oz. of sherry, and allow to stand overnight. Bruise the drugs, put into a jar with the rest of the solids, add the spirit, sherry, and almonds, and macerate for a month. Strain and fine with isinglass, or filter bright.

Curaçao

I

Tincture of fresh orange-peel	ʒj.
Tincture of Tangerine-orange peel	ʒj.
Oil of orange	♏ij.
Rectified spirit	ʒxij.
Water	ʒx.
Syrup	ʒviij.

Mix, and at the end of a few days filter.

II

Fresh orange-peel	ʒxxx.
Tangerine-orange peel	ʒxxx.
Mace	ʒij.
Vanilla	gr. xxiv.
Cinnamon	ʒj.
Rectified spirit	Cong. ij.

Macerate for a week and filter. To the filtrate add

Jamaica rum	ʒxxv.
Sugar	lb. xv.
Water	Cong. j.

Dissolve, add caramel to colour, and water to make the whole measure 50 pints.

Eau des Carmes

A preparation similar to this French speciality is thus made:—

Melissa officinalis (balm)	ʒxiv.
Lemon-peel	ʒiiss.
Cinnamon	ʒj.
Cloves	ʒj.
Nutmegs	ʒj.
Coriander	ʒss.
Angelica-root	ʒss.
Proof spirit	Ov.

Macerate for four days and distil ½ gal.

The Golden Eau des Carmes is tinted with a minim of tincture of saffron to each ounce.

Ginger Brandy

Jamaica ginger, well bruised	½ lb.
Strong brandy	1 gal.

Macerate for fourteen days, shaking repeatedly, and strain through muslin. Boil the ginger gently for twenty minutes in a gallon of water and strain; add

Sugar	10 lbs.

Dissolve, and when cold add the brandy, and finings to clear.

Kirsch

Oil of cinnamon	gtt. v.
Oil of cloves	gtt. ij.
Otto of rose	gtt. v.
Oil of bitter almonds	ʒj.
Rectified spirit	Oxxv.
Cherry syrup	lb. xl.
Water to	Olx.

Mix.

Kola Liqueur

Kola, roasted and bruised	ʒviij.
Coffee, ground and roasted	ʒj.
Cochineal, bruised	ʒss.
Arrack	ʒiiiss.
Rectified spirit	Ovss.
Water	ʒx.

Macerate for a week, filter, and add to a hot solution of

Sugar	lb. xvj.
Water	Ovj.

When cold add essence of bitter almonds (1–20) ʒj.

Kümmel

Oil of caraway	♏ij.
Oil of anise	♏x.
Oil of fennel	gtt. iij.
Oil of lemon	gtt. iij
Oil of nutmeg	gtt. ij.
Brandy	Oj.
Rectified spirit	Oiv.
Sugar	lb. v.
Water to	Cong. j.

Prepare in the usual way,

Maraschino

Essence

Ess. vanillæ	Oiij. ʒviij.
Ol. amygd. amar.	ʒij. ʒij.
Ess. pyri (pear)	ʒxiij.
Spt. rectif.	ʒxxviij.

M.

Liqueur

Oil of bitter almonds	mxv.
Essence of vanilla	ʒj.
Jasmine extrait	ʒij.
Raspberry essence	gtt. x.
Oil of neroli	gtt. x.
Oil of lemon	mxv.
Spirit of nitrous ether	ʒij.
Spirit	Ovj.
Sugar	lb. viij.
Rose-water	ʒx.
Water to	Cong. ij.

Make a liqueur in the usual manner.

Peppermint

Oil of peppermint, Mitcham	ʒj.
Rectified spirit	ʒxv.
Distilled water	ʒxxv.
Chlorophyll	a sufficiency to colour
Kieselguhr	ʒss.

Shake and filter, returning filtrate until bright, and dissolve in it

Sugar	ʒxiij.

Rack for three months.

Sloe Gin

I

Sloes	lb. viij.
Sugar	lb. iv.
Gin	Cong. j.

Macerate for one to three months and strain.

II

Sloes	3 quarts
Bitter almonds	½ oz.
Sugar	3 lbs.
Gin	1 gal.

Macerate for three months, shaking twice a week; strain and bottle.

Vermouth

Oil of French wormwood	mxv.
Oil of angelica	miv.
Oil of galangal	miv.
Oil of bitter almonds	miv.
Spirit of nitrous ether	ʒvj.
Rectified spirit	Cong. j.

Mix and add to a syrup made by dissolving 6 lbs. of sugar in 6 pints of water by the aid of heat, and colour a pale brown with caramel.

Italian Vermouth differs from the above, which is more allied in flavour to the French product.

CULINARY AND HOUSEHOLD REQUISITES

Summary.—Sauces—Ketchups and Pickles—Vinegars—Spiced Vinegars—Curry-powder—Chutneys—Flavouring-essences—Spices—Baking-powders—Custard, etc., Powders—Culinary Colourings and Flavourings—Artificial Fruit Essences—Essence of Rennet—Food-preservatives—Water-glass for Eggs—Cleaning-materials—Laundry-preparations—Furniture-polishes—Metal-polishing Preparations—Boot and Leather Dressings—Pest-exterminators—Disinfectants.

THIS chapter presents considerable difficulty of arrangement; strictly speaking, everything in the book is an article used in the household, but we are now dealing with that special section of goods which are used in the kitchen, in the laundry, throughout the house for cleaning-purposes, or generally in promoting domestic hygiene. For convenience in reference it is necessary to group these methodically; but we know of no rule with which we may conform, except it be that which guides all good housewives—'the way to a man's heart is by his stomach.' If we commence with

SAUCES

we have an excellent precedent for success, as two of the most popular sauces are made by members of the drug-trade. It may be the ambition of many chemists to produce a relish which will acquire a big local reputation, and there is every reason why they should make good sauces. These compounds are as delicate in the making as any Pharmacopœia article: their quality depends much upon the quality of the condiments used in making them and the nicety of the

compounding, and if anything goes wrong a chemist is more likely to hit upon 'the why' and 'the wherefore' than anyone who has little knowledge of the properties of the ingredients.

Tomatoes are the basis of most of the thick sauces. The Channel Islands fruit is now obtainable at a cheap rate during the season, but if the fresh fruit cannot be obtained at a reasonable price, tinned tomatoes may be used.

To thicken sauces use tragacanth powder or starch in the proportion of ½ oz. to the gallon. Fermentation is a frequent source of trouble, and generally arises from the presence of micro-organisms in one or other of the ingredients of the sauces and imperfect boiling in the course of preparation. Sauces containing sugar or treacle are peculiarly liable to this trouble. The points to note, therefore, in such sauces are :—(1) Boil the whole of the ingredients for at least ten minutes; (2) scald the vessels in which the sauce is to be stored or packed; and (3) add to each gallon salicylic acid ʒss. dissolved in spirit.

Brighton Sauce

Garlic	ʒiv.
Cayenne pepper	ʒiss.
Mustard	ʒiij.
Common salt	ʒiij.
Indian soy	ʒxxiv.
Mushroom ketchup	ʒxxiv.
Beaufoy's acetic acid	Oiss.
Water	Oxss.

Skin the garlic and bruise it with the salt; add to the other ingredients, digest in a warm place for a week. Strain and bottle.

Browning Sauce

(For Soups, Gravies, Stews, &c.)

Granulated sugar	72 oz.

Liquefy in an iron vessel over a quick fire; when brown add whilst hot

Water	32 oz.
Indian soy	16 oz.
Walnut ketchup	3 oz.
Mushroom ketchup	3 oz.

Bottle for use.

Chop Relish

Black pepper	ʒj.
Allspice	ʒiv.
Salt	ʒj.
Horseradish	ʒiv.
Shallots	ʒiv.
Walnut ketchup	ʒxx.

Steep for fourteen days and strain; put it into small bottles, and cork well.

Chutney Sauce

Stoned raisins	ʒiv.
Sour or crab apples	ʒviij
Brown sugar	ʒiv.
Powdered ginger	ʒij.
Common salt	ʒij.
Cayenne pepper	ʒij.
Garlic	ʒj.
Vinegar	a sufficiency

Pound the solid ingredients together in a mortar until reduced to a pulpy mass, add enough vinegar to bring the whole to the consistence of cream, and bottle for use.

Cold-meat Sauce

Soy	℥v.
Chillie vinegar	℥x.
Walnut ketchup	℥x.
Mushroom ketchup	Oj.

Mix.

Cucumber Sauce

Peel and slice three large cucumbers and one onion, put into a basin and sprinkle a handful of salt over the vegetables. Allow to stand all night, and next morning bring to the boil. Allow to simmer for half an hour and strain. To this add

Bruised mace	ʒss.
Bruised nutmeg	ʒj.
Bruised black pepper	℥ss.
White wine (Graves or Sauterne)	℥x.
Vinegar	Oj.

Bring to the boil and strain.

Epicurean Sauce

Anchovies	℥xvj.
Shallots (peeled and sliced)	℥iv.
Horseradish (sliced)	℥ij.
Pimento (bruised)	ʒij.
Black pepper (bruised)	ʒij.
Curry powder	ʒj.
Cayenne pepper	ʒj.
Garlic (peeled and sliced)	ʒvj.
Celery-seed (bruised)	℥ss.
Oil of lemon	ʒiss.
Brown vinegar	℥viij.
Indian soy	℥xvj.
Port wine	Oiij.
Walnut ketchup	Oiij.
Mushroom ketchup	Ov.

Gently boil all the ingredients except the vinegar for an hour; strain, add the vinegar, and bottle.

Harvey's Sauce

Anchovies	℥viij.
Lemon-peel	ʒj.
Shallots	ʒj.
Pimento	ʒj.
Horseradish	ʒj.
Walnut pickle	Oj.
Mushroom ketchup	Oj.

Slice or bruise the solids and macerate in the liquids for a month; strain, and thicken with browning.

Favourite Relish

(For Roast Pork and Goose)

Green sage-leaves	℥ij.
Fresh lemon-peel	℥j.
Salt	ʒj.
Minced shallots	℥j.
Powdered capsicum	ʒss.
Citric acid	ʒss.
Claret	Oj.

Macerate fourteen days and strain.

Herefordshire Sauce

Cayenne pepper	ʒj.
Shallots (sliced)	℥ij.
Walnut pickle	Oj.
Indian soy	Oiss.
Mushroom ketchup	Oiv.
Vinegar to	Cong. j.

Macerate for a month and strain.

Imperial Sauce

Anchovies	32 oz.
Shallots (sliced)	8 oz.
Garlic (sliced)	8 oz.
Chillies (bruised)	8 oz.
Brown sugar	8 oz.
Horseradish (scraped)	16 oz.
Bay salt	16 oz.
Cloves (bruised)	3 oz.
Mace (bruised)	2 oz.
Cochineal (bruised)	1 oz.
Curry powder	1 oz.
Vinegar	2 gals.
Mushroom ketchup	1½ gal.
Walnut ketchup	1 gal.
Indian soy	½ gal.

Boil the whole together for twenty minutes and strain through flannel. Allow to settle, and bottle the clear sauce.

Lancashire Sauce

Table-salt	℥ij.
Bruised capsicum	℥ss.
Bruised pimento	℥ss.
Bruised cinnamon	ʒiij.
Bruised cloves	ʒij.
Bruised mace	ʒij.
Bruised coriander	ʒij.
Treacle	lb. ss.
Vinegar	Oiv.

Boil for half an hour, strain, and add

Indian soy	℥x.
Walnut ketchup	℥xv.

Keep in a warm place for a day and strain through a hair sieve.

London Relish

Anchovies (mashed)	℥viij.
Fresh lemon-peel	ʒij.
Minced shallots	℥ij.
Scraped horseradish	ʒij.
Bruised pimento	ʒj.
Bruised black pepper	ʒj.
Bruised celery-seed	ʒij.
Powdered capsicum	ʒij.
Walnut pickle	Oj.
Mushroom ketchup	Oij.

Macerate for a month and strain.

Lord Palmerston Sauce

Mace	ʒiv.
Cloves	℥vj.
Nutmeg	℥vj.
Cayenne pepper	℥vj.
Shallots (peeled and sliced)	℥xvj.
Mushroom ketchup	Oiv.
Walnut ketchup	Oiv.
Port wine	Oiv.
Pickling vinegar	Cong. iiss.

Bruise all the spices together and macerate, with the shallots, in the vinegar for a week; then add the other ingredients, and, after another week, strain.

Newmarket Sauce

Shallots	40 oz.
Capsicum	1 lb.
Cloves	3 oz.
Celery-seed	2 oz.
Mace	1 oz.
Walnut ketchup	2 qts.
Mushroom ketchup	2 qts.
Indian soy	3 qts.
Beaufoy's acetic acid	1 gal.
Water	6 gals.
Salt	2 lbs.

Peel and slice the shallots, bruise the capsicum, cloves, celery-seed, and mace, add the other ingredients, bring to the boil, and after a week strain.

Oyez Sauce

Garlic	℥vij.
Shallots	℥vij.
Capsicum	℥iv.
Mace	℥ij.
Cloves	℥ij.
Indian soy	Cong. ij.
Malt vinegar	Cong. vj.

Boil the bruised solids in the liquids for fifteen minutes and strain.

Penny Sauce

Sauce gruffs	6 lbs.
Vinegar	2 gals.
Sliced garlic	2 oz.
Treacle	3 lbs.
Soy	2 lbs.
Salt	8 oz.
Capsicum	½ oz.
Caramel	1 lb.
Essence of anchovy	8 oz.

Boil the gruffs with the vinegar, garlic, and salt for half an hour; strain, add the rest of the ingredients, boil for another half-hour, and bottle when cold.

Quin's Fish-sauce

Bruised anchovies and shallots, six of each.

Cayenne	ʒss.
Soy	ʒss.
Port wine	ʒiij.
Walnut pickle	ʒiij.
Mushroom ketchup	ʒvj.

Simmer gently for ten minutes and bottle.

Reading Relish

Powdered capsicum	ʒss.
Bruised ginger	ʒj.
Bruised long pepper	ʒj.
Bruised mustard-seed	ʒj.
Essence of anchovy	ʒij.
Indian soy	ʒxv.
Water	Oij.

Boil together for an hour and add to

Vinegar	Oij.
Mushroom ketchup	Oj.
Bruised shallots	ʒiss.

previously boiled for half an hour. Allow the mixture to simmer with a dozen sweet-bay leaves for half an hour and strain.

Royal Relish

Garlic (peeled and sliced)	ʒiiiss.
Tincture of capsicum	ʒij.
Indian soy	ʒxvj.
Tomato sauce	ʒxxxij.
Walnut ketchup	ʒxxxij.
Pickling vinegar	ʒlxiv.

Macerate for a month and strain.

Savory's Hot Pickle

Cayenne	ʒij.
White pepper, black pepper, and mustard-seed, of each	ʒj.
Ginger	ʒij.
Common salt	ʒvj.
Vinegar	Oiv.

Boil for twenty minutes and strain.

Sauce l'Empereur

Cloves, mace, and pimento, of each	ʒj.
Anchovies and walnut-juice, of each	ʒxvj.

Boil and add

Two shallots.	
Indian soy	ʒv.
Port wine	ʒx.
Vinegar	Oj.

Boil and simmer for twenty minutes, and strain.

Sauce Piquante

Horseradish	ʒj.
Salt	ʒiv.
Mustard	ʒij.
Shallots	ʒss.
Celery-seed	ʒss.
Capsicum	ʒss.
Tarragon vinegar	Oj.

Bruise the solids and macerate in the vinegar for fourteen days; then strain.

Sauce au Roi

Cayenne	ʒj.
Cloves and shallots, six of each.	
Walnut-juice and Indian soy, of each	ʒv.
Vinegar	Ovj.

Boil for twenty minutes and strain.

Sauce Superlative

Claret	ʒxx.
Mushroom ketchup	ʒxx.
Pickled walnuts	ʒx.
Anchovies	No. iv.
Fresh lemon-peel	ʒj.
Shallots	ʒj.
Horseradish	ʒij.
Allspice	ʒiv.
Black pepper	ʒiv.
Cayenne	ʒiij.
Celery-seed	ʒj.
Soy	ʒv.

Macerate for fourteen days and strain.

Somerset Sauce

Garlic (peeled and sliced)	ʒvj.
Shallots (peeled and sliced)	ʒj.
Cayenne pepper	ʒv.
Common salt	ʒij.
Port wine	Oj.
Indian soy	Oij.
Walnut ketchup	Oiij.
Chillie vinegar	Oivss.
Mushroom ketchup	Oivss.

Macerate for a month and strain.

Tomato Sauce

I

Ripe tomatoes	6 quarts

Bruise, and set in an oven with ½ lb. of salt and a quart of water. At the end of an hour pour off a gallon of juice, and to this add

Shallots (peeled and sliced)	ʒiv.
Black pepper (bruised)	℥ss.
Mace (bruised)	℥ss.
Pimento (bruised)	℥ss.
Ginger (bruised)	℥ss.
Nutmeg (bruised)	℥ss.
Cochineal (in coarse powder)	ʒij.
Cayenne pepper (in coarse powder)	ʒj.
Brown vinegar	Oj.

Simmer gently for half an hour, strain, thicken with ʒiv. powdered tragacanth, and bottle.

II

Ripe tomatoes	3 doz.
Chillie vinegar	1 pint
Garlic	1 oz.
Shallots	1 oz.
Common salt	2 oz.
Cayenne pepper	½ dr.
Lemon-juice	5 oz.

Put the tomatoes into a jar and warm in an oven until tender. Cool, skin, and pulp the fruit, and add to the liquor in the jar, along with the rest of the ingredients. Mix well and bottle.

Worcester

I

Liver	20 lbs.
Water	10 gals.

Boil twelve hours, frequently renewing the water. Chop up the liver, work with the water, pass through a sieve, and mix with the following:—

White vinegar	15 gals.
Walnut ketchup	10 gals.
Mushroom ketchup	10 gals.
Madeira wine	5 gals.
Table-salt	25 lbs.
Canton soy	4 lbs.
Cayenne pepper (bruised)	2 lbs.
Ginger (bruised)	1 lb.
Black pepper (powdered)	1 lb.
Allspice (powdered)	1 lb.
Coriander (powdered)	1 lb.
Mace	½ lb.
Cinnamon	½ lb.
Asafetida (dissolved in 1 gal. of brandy)	¼ lb.

Allow to stand for a month and strain.

II

Boiled sheep's liver, bruised	ʒiv.
Tamarinds	ʒviij.
Brown sugar, bruised shallots, mustard, and salt, of each	ʒij.
Curry powder	ʒj.
Pimento in powder	ʒij.
Cloves, black pepper, capsicum, and ginger in powder, of each	ʒj.
Tincture of asafetida	ʒij.
White wine vinegar	Oiij.

Mix and heat to boiling, stirring all the time; then cover, simmer for ten minutes, and when nearly cold add

Sherry wine	Oj.

Set aside for a month and strain.

Thick York Sauce

Garlic (peeled and sliced)	℥ss.
Capsicum	℥j.
Mustard	℥iss.
Salt	℥ij.
Essence of anchovies	℥iss.
Walnut pickle	℥vj.
Mushroom ketchup	℥vj.
Brandy	℥viij.
Indian soy	℥viij.
Brown vinegar	℥xlviij.

Macerate for a month and strain.

True Blue Sauce

Tincture of capsicum	℥iss.
Mushroom ketchup	℥vj.
Distilled vinegar	℥vj.
Reading sauce	Oss.

Mix.

NOTE.—Although in this case any kind of distilled vinegar may be used, it is important to observe that vinegar distilled from wine has the most delicate flavour. Epicures consider that it alone should be used in making salad-dressings.

At the trial of an action by Goodall, Backhouse & Co. (May, 1895) to restrain another firm from selling as Yorkshire Relish a sauce not made by the plaintiffs, the late Mr. A. H. Allen, Dr. Otto Hehner, and the late Sir Thomas Stevenson gave evidence relating to the composition of the sauces. Both Mr. Allen and Dr. Hehner agreed that a marked peculiarity of the imitation 'relish' was the large amount of cream of tartar it contained in the form of crystals. Sir Thomas Stevenson submitted the following interesting analytical results :—

The specific gravity of genuine Yorkshire Relish was 1·110, and of the imitation 1·077. The acidity of the former was 3·62, and of the latter 3·68. The total of dissolved solid matters (dried at 212° and 248° F.) in the genuine was 27 and 23·25 ; while the imitation gave 15·94 and 14·95. The mineral matter in the genuine was 4·95, and in the imitation 2·72 ; the nitrogen 0·13 and 0·16 ; nitrogenous matter, equal to albuminoids, 0·82 and 1 ; sugar (glucose), 9·66 and 9·78 ; invertible sugar (cane-sugar) 3·08, but none in the imitation. From this last-mentioned result Sir Thomas Stevenson inferred that cane-sugar was added as an ingredient in one, or some substance that became sugar, and remained as such. There was practically twice as much chloride of sodium in Goodall's relish as in the defendants', and there was in the plaintiffs' 0·80 per cent. of alcohol, and in the defendants' not more than 0·1. Cream of tartar was much more abundant in the defendants' than in the plaintiffs' sauce, which seemed to point to this—that either cream of tartar or some fruit containing tartaric acid had been used in larger quantities in the defendants' than in the plaintiffs'. In odour the defendants' sauce was more garlicky and less aromatic than the plaintiffs'.

These statements are quoted here to show how many things have to be considered in constructing a sauce, and how difficult it is to imitate any one.

KETCHUPS AND PICKLES

Cucumber Ketchup.—Peel ripe cucumbers, grate the fleshy portion, and pass it through a colander or coarse sieve to free it from seeds. To each 3 pints of the pulp add 2 oz. of salt, ½ oz. of white pepper in powder, and 1 pint of vinegar. Macerate for a fortnight, occasionally stirring, and strain.

Horseradish Ketchup.—Macerate 1 lb. of grated horseradish in 2 pints of vinegar for a month and strain.

Ketchup Seasoning is a mixture of cloves, ginger, black pepper, and pimento in equal parts.

Mushroom Ketchup.—Upon a suitable quantity of the fresh mushrooms sprinkle salt (about 1 to 4 of the fungi), and after three days squeeze out the juice. To every gallon of juice add black pepper, ginger, and cloves, of each ½ oz., pimento 2 oz., mustard-seed 2 oz., and a sufficient quantity of salt. Boil for five minutes and set aside to settle. Strain after seven days.

Tomato Ketchup.—Well-strained tomato sauce; for example, No. 1 without the tragacanth. Another good method is: Slice 4 lbs. of ripe tomatoes and sprinkle over them 4 oz. of common salt. Allow to stand overnight, then boil till tender and strain through a colander. To the strained liquor add three sliced shallots, 1 oz. bruised ginger, 1½ oz. bruised pimento, ½ oz. bruised black pepper, half a pint of white wine, and a pint of chillie vinegar. Boil for an hour under cover, and strain.

Walnut Ketchup.—Crush ten dozen green walnuts, and to the mass add ground black pepper 1½ oz., ground nutmeg 1½ oz., ground cloves ½ oz., ground ginger ½ oz., ground mace ¼ oz. Boil the whole in ½ gal. of vinegar for half an hour, then set aside for a week and strain.

Walnut Pickle.—The manufacture of pickles is a subject which scarcely comes within the scope of the present volume, and if we may judge from *The Chemist and Druggist's* experience, there is little demand from the drug-trade for such information. But as walnut pickle occurs in several of the foregoing formulas it may be stated that it is made by steeping fresh and ripe walnuts (freed from the husks) in strong brine for a week, removing, drying in the air for a day, then packing in jars and covering with boiling pickling-vinegar.

Lemon Pickle.—Slit unpeeled lemons, previously cured, into quarters without separating the pieces, sprinkle with salt, and lay aside in dishes for a week. Then pack in jars with two or three cayenne pods to each lemon and a good sprinkling of turmeric, and cover with hot vinegar.

Pickling-mixture.—Common salt 3 lbs., brown sugar ½ lb., saltpetre 4 oz., and water 2 gals. Boil for half an hour, and strain. Before being placed in this, meat should be rubbed twice or three times a week with a mixture of bay salt 8 oz., common salt 8 oz., brown sugar 6 oz., saltpetre 2 oz., and black pepper 2 oz. Mix.

Soy.—This common ingredient of sauces is generally imported from the East. It is made from the seeds of *Glycine Soja* (*Soya hispida*), which is largely cultivated in China, India, and Japan. The seeds or beans are first roasted like coffee, and to this a certain quantity of malted barley (also partially torrified) is added, with a liberal dose of salt and cold water to make the whole into a gruel. This is set aside for some time, then a special ferment is added, and the mixture kept for a long time—frequently for three years, if the quality of the product is to be the best. The method of manufacture, so far as the details are concerned, is practically a secret; and as the product cannot be accurately imitated, we recommend only the imported soy to be used in making sauces. Factitious Soy is made by mixing together 1 gal. of malt syrup (ext. malt 4 lbs., water to 1 gal.), 5 lbs. of treacle, 4 lbs. of salt, and 2 pints of mushroom-juice. Heat gently in order to facilitate the mixing, set aside for a fortnight, and decant from any deposit.

VINEGARS

The law has not yet interpreted vinegar to mean the product obtained as the British Pharmacopœia directed—viz., 'from a mixture of malted and unmalted grain by the acetous fermentation,' but there are sufficient magisterial decisions to show that dilute acetic acid made from wood cannot be sold as 'malt vinegar' or 'white wine vinegar.' For pickling purposes malt vinegar is strong enough if the vegetables are allowed to remain in pickle for at least four months, otherwise the vinegar must be fortified with acetic acid. The common Pickling-vinegar in demand during the pickling season is a mixture of 1 part of acetic acid 33 per cent., and 4 or 5 parts of water. Of course a spiced vinegar is more acceptable, and when condiments are not used along with the vegetables the spiced article alone should be employed.

It is well to remember that a certain minimum of acetic acid (between 3 and 4 per cent.) is necessary to prevent fermentation of vegetables; and the reason for using vinegar double that strength is that the water in the vegetables lowers the percentage of acid. Pickling malt vinegar (No. 24) is also obtainable, and either it or the acetic-acid vinegar may be used in compounding the following recipes, which are for preparations to be used in making sauces or for pickling.

Celery Vinegar

Celery-seed, bruised	℥vj.
Vinegar	Cong. j.

Macerate for a month and filter.

Chillie Vinegar

Bruised capsicum	℥iv.
Vinegar	Cong. j.

Macerate for a month and filter.

Generally speaking, the above strengths are those adopted in making simple vinegars, such as those of curry, garlic, horseradish, and shallots. Tarragon Vinegar is, however, made differently—viz., by bruising any desired quantity of the fresh leaves, placing the bruised mass into a jar and covering with vinegar. Stir every day for a fortnight, then press and filter. The tarragon is *Artemisia Dracunculus*, and its aromatic principle is identical with anethol.

Spiced Vinegars

For French Beans

White pepper, bruised	℥iv.
Sliced ginger	℥ij.
Capsicums, bruised	℥j.
Vinegar	Cong. j.

Macerate the spices in ½ gal. of the vinegar for twelve hours, then simmer without boiling for half an hour; add the rest of the vinegar, and use hot.

For Gherkins

Black pepper, bruised	℥vj.
Bruised ginger	℥iv.
Capsicums, bruised	℥j.
Sliced garlic	℥j.
Vinegar	Cong. j.

Boil in half the vinegar for an hour, strain and wash the marc with the rest of the vinegar. Then boil the marc and 2 oz. of salt in a pint of water for an hour, add another pint of vinegar, and strain into the first infusion.

For Walnuts

Bruised black pepper	℥viij.
Bruised ginger	℥vj.
Bruised mustard-seed	℥xvj.
Bruised cloves	℥ij.
Bruised mace	℥ij.
Bruised garlic	℥ij.
Vinegar	Cong. ij.

Boil the spices in a gallon of the vinegar and strain into the jar of walnuts. The other gallon of vinegar may be separately boiled and also poured upon the walnuts.

For Use with any Vegetable

Jamaica ginger	℥ss.
Pimento	℥ss.
Curry powder	℥j.
Long pepper	℥iss.
Black pepper	℥iss.
Mustard	℥iv.
Mustard-seed	℥iv.
Vinegar	Oiv.

Bruise the spices and simmer gently in the vinegar for ten minutes, cool, and strain.

Vinaigre aux fines herbes. — Fresh horseradish, tarragon-leaves, thyme, marjoram-leaves, sage, mint, and balm leaves, of each 1 oz., shallots 4 (one young), vinegar a quart. Macerate for a fortnight or more and filter. Should have a green colour.

Raspberry Vinegar can be made from the 'gruffs' of pressed fruit used in making jelly. Put the gruffs into a jar and cover with vinegar. Allow to macerate for a few days, then strain, and in each pint of the liquor dissolve ½ lb. or more of sugar. A better vinegar is made by macerating 6 lbs. of the fresh berries in 3 pints of vinegar for ten days and straining, allowing the fruit to drain well.

Anchovy Paste.—This is sometimes called Essence of Anchovies, and is so referred to in some of the formulas; but, strictly speaking, it is a vinegar paste, and is made in the following manner:—

Pound 1 lb. or anchovies in a mortar, put them into a pipkin with 4 oz. of vinegar, and boil for a few minutes, then pulp through a hair sieve. To the portion that passes through the sieve add 2 oz. of salt, the same quantity of flour, and sufficient water to give it the proper consistence. Boil them together for a few minutes and colour the mixture with annatto. A little cayenne pepper is sometimes added.

Essence of Turtle

Essence of anchovy	℥iss.
Shallot wine	℥ij. ℥ij.
Basil wine	℥vj.
Mushroom ketchup . . .	℥iij.
Citric acid	℥j.

Mix.

Preserving Mushrooms.—To 1 lb. of button mushrooms, carefully wiped and trimmed, add 1 oz. of fine salt, evenly distributed. After a few minutes' stirring put them into a covered jar, and set for half an hour in a moderately hot oven. Then pour off the exuded liquor, to it add one-fifth of its measure of B.P. acetic acid, and raise to the boiling-point in an enamelled saucepan. Finally, pour it back upon the mushrooms, still kept warm, adding ½ dr. mace (broken up) and 1½ dr. of whole black pepper. Set aside for a fortnight.

CURRY POWDER

This condiment is one of the things England gained when she conquered India; that is to say, the taste for it, because no Indian cook worth his salt would tell how he makes his curry—and he generally has several compositions. Yet every maker of curry powder considers his own particular article the only original condiment. Of such we give more than a score of recipes which have come from Hindoo cooks, East Indian missionaries, and military heroes—men who have suffered for their country in curry as well as in warfare.

It should be noted that it is a mistake to have the powder a pure yellow colour; rather should it be brownish, with a yellow tinge. Hence it should contain not more than 25 per cent. of turmeric. Nor must it be forgotten that flavour is important above all other requirements. This is to be obtained by using fresh condiments, freshly ground, and (herein lies the secret of rich flavour) ground together. Pungency is a matter of cayenne pepper, and can be controlled at will. Preference is given to those powders containing cardamoms and cummin, but all the formulas that are tabulated require modification of the proportion of turmeric.

For all practical purposes the first two formulas are quite suitable. The powders are well—even richly—flavoured, and are excellently adapted for retailing.

I

Coriander-seed	℥vj.
Cardamom-seed	℥ss.
Madras turmeric	℥iij.
Jamaica ginger	℥iij.
Cayenne pepper	℥iij.
Cummin-seed	℥j.
Fenugreek-seed	℥iss.
Cinnamon	℥ij.
Pimento	℥ij.
Black pepper	℥j.
Long pepper	℥j.
Cloves	℥j.
Nutmeg	℥j.

The whole to be in powder, mixed intimately in a mortar and sifted.

II

Sem. coriand.	℥xiij.
Piper. nigri	℥v.
Fruct. capsici	℥j.
Sem. cymini	℥vj.
Sem. fenugræci	℥vj.
Rad. curcumæ	℥vj.

Grind the whole of these substances together in the mill and sift.

It sometimes happens that the retailer is asked to match a particular curry powder. In such cases the following table of formulas will be found very useful. The retailer should endeavour by sense of smell and taste to find out what the powder submitted is composed of, and after some practice and patience the approximate composition is fairly arrived at. A comparison of the analytical notes with the table will then give a basis for working upon, the final adjustment of the flavour being attained by adding some of the spice in which the compounded powder is deficient.

——	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX	XX
Turmeric . . .	4 oz.	2 oz.	3 oz.	5 oz.	6 oz.	2 oz.	8 oz.	6 oz.	8 oz.	3 oz.	8 oz.	6 oz.	3 oz.	8 oz.	8 oz.	3 oz.	2 oz.	4 oz.	1½ lb.	4 oz.
Coriander . . .	8 oz.	6 oz.	1 oz.	3 oz.	1 oz.	1 oz.	2 oz.	13 oz.	2 oz.	4 oz.	16 oz.	6 oz.	6½ oz.	4 oz.	2 oz.	12 oz.	6 oz.	2 oz.	—	12 oz.
Ginger	3 oz.	½ oz.	1 oz.	1 oz.	1 oz.	2 oz.	2 oz.	—	—	2 oz.	—	—	1 oz.	—	2 oz.	—	—	1 oz.	2 oz.	2 oz.
Cinnamon . . .	½ oz.	2 dr.	—	—	¼ oz.	—	—	—	½ oz.	—	—	—	1½ oz.	—	—	—	—	—	—	3 oz.
Cassia	—	—	—	—	—	—	—	—	2 oz.	—	—	—	—	—	—	2 dr.	—	—	—	—
Cardamoms . . .	½ oz.	—	1 oz.	1 oz.	—	½ oz.	1 oz.	—	—	2 oz.	—	—	—	—	—	½ oz.	—	½ oz.	1 oz.	½ oz.
Grains of Paradise . .	—	—	—	—	—	—	—	—	1 oz.	—	—	2 oz.	—	—	—	—	—	—	—	—
Caraway . . .	—	—	—	—	—	—	—	—	—	—	—	4 oz.	—	—	—	—	—		2 oz.	—
Cayenne	2 oz.	6 dr.	¾ oz.	1 oz.	½ oz.	½ oz.	1 oz.	1 oz.	½ oz.	2 oz.	1½ oz.	½ oz.	½ oz.	½ oz.	1 oz.	6 dr.	½ oz.	1 oz.	1 oz.	1½ oz.
Black pepper . . .	1½ oz.	½ oz.	—	1 oz.	4 oz.	—	2 oz.	2 oz.	1 oz.	1 oz.	1½ oz.	1 oz.	2½ oz.	—	—	2 oz.	3 oz.	1 oz.	2 oz.	6 oz.
Mace	—	1 dr.	—	¼ oz.	—	—	—	—	2 dr.	—	—	—	—	—	—	—	—	¼ oz.	—	1 oz.
Fenugreek . . .	—	1½ oz.	½ oz.	—	1 oz.	—	—	—	—	—	2 oz.	—	1 oz.	2 oz.	1 oz.	1 oz.	1 oz.	—	4 oz.	—
Cummin	2 oz.	—	½ oz.	—	1 oz.	½ oz.	2 oz.	3 oz.	—	—	—	—	—	2 oz.	1 oz.	4 oz.	2 oz.	1 oz.	3 oz.	3 oz.
Pimento	—	2 dr.	—	—	—	—	—	—	—	—	—	—	1 oz.	—	—	2 dr.	—	—	—	1 oz.
Cloves	—	1 dr.	—	—	—	—	—	—	½ oz.	—	—	—	2 dr.	—	½ oz.	2 dr.	—	—	1 oz.	2 dr.
Nutmeg	—	½ oz.	—	—	—	—	—	—	—	—	—	—	—	—	1 oz.	—	—	—	—	—
White pepper . .	—	—	1 oz.	—	—	1 oz.	—	—	—	—	—	—	—	—	1 oz.	—	—	—	—	—
Scorched mustard . .	—	—	—	2 oz.	—	—	—	—	—	3 oz.	—	—	—	—	—	—	—	—	—	1 oz.
Lemon-peel (in powder) .	—	—	—	—	—	1 oz.	—	—	—	—	—	—	—	—	—	—	—	—	—	—

CHUTNEYS, OR CHUTNEES

It is impossible in this country to produce a chutney equal to the fine Indian products, for here we have not certain fresh fruits which are material to the flavour. We give, however, typical formulas :—

I

Peeled and cored apples	6	lbs.
Tamarinds	3	lbs.
Tomatoes	3	lbs.
Sultana raisins	1	lb.
Treacle	1	lb.
Curry powder	8	oz.
Salt	8	oz.
Bruised mustard-seed	2	oz.
Bruised ginger	2	oz.
Bruised garlic	1	oz.
Bruised capsicum	¾	oz.
Bruised mace	½	oz.
Indian soy	16	oz.
Water	1	pt.
Vinegar	6	pts.

In an enamelled pan boil together all the ingredients except treacle, soy, salt, ginger, and mace, and at the end of twenty minutes pass through a coarse sieve. Put the pulp into a covered jar, stir every day for a fortnight, then add the remaining ingredients to the pulp and boil until it is of suitable consistency.

II

Apples	5	lbs.
Raisins	1	lb.
Tamarinds	2½	lbs.
Garlic	2	oz.
Salt	1	lb.
Powdered capsicum	4	dr.
Sugar	1½	lb.
Powdered ginger	½	lb.
Vinegar	48	oz.
Ketchup	12	oz.
Citric acid	80	gr.

Prepare like No. 1.

III

Gooseberries	2	qts.
Vinegar	2	qts.
Salt	1	lb.
Mustard-seed	1	lb.
Stoned raisins	1	lb.
Brown sugar	1	lb.
Garlic	1½	oz.
Capsicums	¾	oz.

Make a syrup of the sugar with a pint of vinegar. Boil the gooseberries in the rest of the vinegar. Bruise the mustard-seed and the garlic, and with them well incorporate the boiled fruit, mashing the whole thoroughly ; then work in the rest of the ingredients.

IV

Sour apples	1	lb.
One medium-sized onion.		
Raisins	3	oz.
Garlic	1	oz.
Salt	1	oz.
Ground ginger	1	oz.
Shallots	1	oz.
Mustard-seed	1	oz.
Brown sugar	4	oz.
One lemon.		
Powdered capsicum	½	oz.
Vinegar	25	oz.

Pare, core, and chop the apples small ; similarly prepare the raisins (stoned), onion, garlic, and shallots. Put into a stone jar with the rest of the ingredients except the lemon and vinegar. Pour the boiling vinegar into the jar, then add the lemon in thin slices, cover, and allow the contents of the jar to cook until

the apples, shallots, &c., are soft. Cool and pass through a coarse sieve. Set aside for two months before using.

V

Sour apples	2½ lbs.
Preserved ginger	½ lb.
Stoned raisins	½ lb.
Sugar	½ lb.
Three lemons.	
Common salt	3 oz.
Powdered capsicum	¼ oz.
Boiling vinegar	30 oz.

Prepare like No. IV.

Tomato Chutnee

Peeled tomatoes	4 lbs.
Pared and cored apples	2 lbs.
Brown sugar	2 lbs.
Sultana raisins	1 lb.
Table-salt	4 oz.
Green ginger	3 oz.
Bruised mustard-seed	2 oz.
Garlic	2 oz.
Bruised capsicums	½ oz.
Vinegar	2 quarts

Prepare the solids in the usual manner, boil in the vinegar until tender, then pass through a coarse sieve.

OTHER FLAVOURING POWDERS, SPICES, &c.

Brown-gravy Salt

(For Colouring Soups, Gravies, &c.)

Sodii chloridi	℥viij.
Sacchar. alb.	℥iv.
Pulv. pip. capsici	gr. v.

Mix all together in a mortar with care, transfer to a frying-pan over a good fire, stirring constantly till brown enough, and rub through a sieve whilst hot.

Browning for Gravies

Best white sugar	℥viij.
Butter	℥ij.

Boil together until brown (*see* p. 273).

Celery Salt

I

Common salt	℥iv.
Essence of celery	℥ij.

Mix well together.

Convenient to flavour soups, &c., and for eating with cheese.

II

Common salt (dry)	℥xvj.
Celery	℥vj.

Cut the celery into slices of about ¼ inch, and thoroughly incorporate the salt with the slices, without expression or pounding, in a mortar, so that the salt may take up the juicy part of the celery. Put into a dish in an oven for half an hour, then beat up for ten minutes; return to the dish and dry for about an hour; the salt will then have become caked, but a few stirs round with a pestle will soon reduce it, so that the greater portion may be passed through a fine hair sieve. Place in airtight bottles or jars.

Essence of Celery

Celery-seeds (bruised)	℥j.
Rectified spirit	℥iij.

Macerate seven days and filter.

Emperor's Spice

(A favourite continental powder)

Lemon-peel	℥xviij.
Mustard	℥ss.
Cloves	℥ij.
Nutmegs	℥ij.
Salt	℥j.
Black pepper	℥ss.
Ginger	℥ij.
Capsicums	℥j.

All to be in fine powder and well mixed.

Salad-dressing

Mix the yolks of four eggs with ½ oz. of mustard, then beat in with an egg-whisk 4 oz. of salad oil, next the same of the best vinegar and of water, and finally 1 dr. of table-salt. This makes a splendid dressing, but should be prepared as required. The following is for bottling:—

Two eggs.	
Best olive oil	℥iv.
Vinegar	℥v.
Soluble cayenne	℈ss.
Table-salt	ʒiss.
Russian isinglass	℈ss.
E.S. mustard flour	℥ss.

Beat up the eggs thoroughly and emulsify the oil with the mixture, then add the isinglass, cayenne, and salt previously dissolved in the vinegar. Again mix well, and work in the mustard carefully.

Savoury Ragout-powder

(This is practically Emperor's Spice)

Salt	ʒj.
Mustard, black pepper, and lemon-peel (grated), of each	℥ss.
Pimento, ginger, nutmeg, and cayenne, of each	ʒij.

Mix.

Soluble Cayenne

A strong tincture is made by percolating 1 lb. of pods with rectified spirit until 2½ pints of tincture is obtained; half the spirit is distilled off (and used for the next percolation) and the residue mixed with 5 lbs. of fine dry salt, dried very gently, passed through a sieve, and stored in dry bottles. Sometimes a little sanders or Brazil wood is added to the capsicum. The process may be considerably shortened by using capsicin (oleo-resin of capsicum), 1 dr. of which dissolved in an ounce of spirit is sufficient for 1 lb. of salt.

Sausage Flavouring

I

White pepper	2 oz.
Jamaica pepper	6 dr.
Black pepper	3 dr.
Ginger	3 dr.
Capsicum	2 dr.
Mace	1 dr.
Cloves	10 gr.

II

Powdered celery-seed	ʒij.
Powdered mace	ʒj.
Powdered nutmeg	ʒj.
Powdered black pepper	℥ij.
Powdered common salt	℥ij.
Ground rice	℥vj.

Tint a dark salmon colour with finely powdered red sanderswood.

III

Powdered capsicum	℥j.
Powdered cummin	℥j.
Powdered cassia	℥j.
Powdered nutmeg	℥ij.
Powdered pimento	℥vj.
Powdered black pepper	℥viij.
Table-salt	℥viij.

IV

Salt	2 lbs.
Black pepper	1 lb.
Capsicum	½ oz.

Add 3 oz. to every 10 lbs. of meat, and 1 oz. of boric acid.

Continental Spice

Cardamoms	℥j.
Ginger	℥j.
Cloves	℥ij.
Anise	℥iv.
Coriander	℥viij.

Powder and mix.

This spice is used in making potted meats and the like.

Zest

(A seasoning powder for potted meats, pies, &c.)

Pulv. piper. alb.	ʒiiss.
Pulv. macidis	℥ss.
Pulv. myristic.	℥ss.
Pulv. capsici	℥ss.

Easter-bun Spices

(London style)

Pulv. myristicæ	ʒvj.
Pulv. macidis	ʒj.
Pulv. capsici	ʒij.
Pulv. cinnamomi	ʒiv.
Pulv. zingiberis	ʒviij.

Mix and sift.

(English provincial)

Pulv. myristicæ	ʒij.
Pulv. zingiberis	ʒj.
Ol. caryophylli	♏vj.

Mix well in a mortar.

(Scotch style)

Pulv. zingiberis	ʒv.
Pulv. coriandri	ʒv.
Pulv. carui	ʒiiiss.
Pulv. caryophylli	ʒj.
Pulv. pimentæ	ʒvj.
Pulv. cassiæ	ʒvj.
Pulv. myristicæ	ʒss.

Mix and sift.

Use 1 oz. to 7 lbs. of flour.

Essence

Pulv. pimentæ	ʒij.
Pulv. cassiæ	ʒj.
Pulv. caryophyll.	ʒss.
Pulv. zingiberis	ʒss.
Spt. rectificat.	ʒxiv.
Aq.	ʒvj.

Make a pint of tincture by percolation, and in the percolate dissolve

Ol. pimentæ	ʒss.

A teaspoonful to a pound of flour.

Kitchener's Spirit of Savoury Spices

Black pepper	ʒj.
Pimento	ʒss.
Nutmeg	ʒss.
Rectified spirit	ʒxij.
Water	ʒiv.

Make a tincture by macerating for a week.

Essence of Herbs for Soups

Savory, sweet marjoram, and basil, of each	ʒij.
Thyme	ʒj.
Sage and black pepper, of each	ʒss.
Celery-seed	ʒiss.
Rectified spirit	Oiiss.
Water	ʒx.

Make 50 oz. of tincture by percolation with the spirit and water previously mixed.

The addition of lemon-peel and shallots makes a nice change in the flavour—an ounce of each to the above quantity.

Mixed Spice

Powdered coriander	ʒxvj.
Powdered pimento	ʒiv.
Powdered caraway	ʒiv.
Powdered cinnamon	ʒij.
Powdered mace	ʒij.
Powdered cloves	ʒij.
Powdered nutmeg	ʒij.
Powdered turmeric	ʒj.

Mix.

Sausage-colouring

Various substances are sold under this name, the object of them being to colour the skins. The large makers of polonies use ammoniacal solution of carmine, but this is giving place to a plain watery solution of an artificial red dye. A very good one for the purpose is OOC scarlet. This, or a nearly allied colour, is now much used by sausage-makers, especially in the form—Borax, 6 parts; OOC scarlet, 1 part. For colouring the meat Armenian bole is used, but rice-flour stained with an alcoholic solution of the OOC scarlet is better and safer. Another favourite colouring is a mixture of camwood substitute 1 oz. and sodium bicarbonate 1 lb., half an ounce of the mixture being used with 40 lbs. of sausage-meat.

Baking-powders

I

Cream of tartar (95-per-cent.)	lb. ij.
Bicarbonate of sodium	lb. j.
Ground rice	lb. iss.

II

Tartaric acid	℥xviij.
Bicarbonate of sodium	℥xx.
Ground rice	lb. ij. or iij.

III

Tartaric acid	lb. iij.
Bicarbonate of sodium	lb. iij.
Carbonate of magnesium	lb. ss.
Rice-flour	lb. viij.

IV

Acid sulphate of potassium	3 lbs.
Sodium bicarbonate	1 lb.
Cornflour	1 lb.

V

Cornflour	4 lbs.
Cream of tartar	2½ lbs.
Sodium bicarbonate	2½ lbs.
Calcium acid phosphate	1 lb.

VI

Tartaric acid	3 oz.
Cream of tartar	1 lb.
Sodium bicarbonate	1 lb.
Wheaten flour	2 lbs.
Cornflour	8 oz.

VII

Calcium acid phosphate	37 parts
Sodium bicarbonate	23 parts
Rice flour	40 parts

VIII

Calcium acid phosphate	50 parts
Sodium bicarbonate	25 parts
Cornflour	25 parts

Directions for Use.—In making bread, to every pound of flour add a large heaped-up teaspoonful of baking-powder with a little salt, and thoroughly mix while in a dry state; then pour on gradually about half a pint of water, mixing thoroughly into a dough. Make it into small loaves, and put them into a quick oven. For batters and pastries use at least two teaspoonfuls to each pound of flour.

The ideal baking-powder is one consisting of cream of tartar (100-per-cent.) 69 parts, sodium bicarbonate 31 parts (*see* p. 244), with amylaceous diluent up to half the combined acid and alkali. The foregoing formulas assume that the acid tartrate is 95-per-cent. Cream of tartar is better than tartaric acid for two practical reasons, which substantially are one in theory: first, powders containing cream of tartar keep their properties longer, and, secondly, in the dough the carbonic-acid gas is evolved more steadily and slowly than is the case with tartaric acid. The first point is one to which compounders of baking-powders should pay particular attention, for although they may provide the cook with an article which is beyond praise when made, as soon as the box or packet is opened, the powder begins to deteriorate and by the time it is finished little gas is produced when it is mixed with flour and water. In compounding the powders each ingredient should be dried separately at a temperature of about 140° F., then the acid

ingredient should be mixed with half of the rice-flour or other amylaceous diluent, and the bicarbonate with the remainder, finally mixing together thoroughly by several siftings. Cream-of-tartar powders also have the advantage of furnishing bread of good white colour, provided the flour is 'firsts,' whereas other acid materials are very apt to darken the dough and produce brownish spots in the bread. Owing to its comparatively slow action, cream of tartar enables the dough or paste to be kept in the baking-tray for some time before it is put into the oven, whereby the baking becomes much lighter than is the case when a tartaric-acid powder is employed. Doughs and pastes made with the latter must be put into the oven immediately if they are to come out right, and compounders should be careful to state this fact in the directions for use. Reference is made later to the substitutes for cream of tartar and tartaric acid. Of these one largely favoured in Great Britain is potassium bisulphate, whose saturating-power (see p. 245) is 136 to 83 of sodium bicarbonate; nevertheless, experience with ordinary commercial acid sulphate, and the pure, shows that if three parts of acid sulphate are not used with one part of bicarbonate an alkaline powder results which produces great discoloration of the baking. 'Tartaraline' contains the acid sulphate with 10 per cent. of farina (potato starch). One of the best substitutes is acid ammonium phosphate, which not only yields a fair volume of carbonic acid, but in the oven the ammonium salts are volatilised and thus produce a very light pastry or bread. Acid calcium phosphate is now so much employed in England that the Local Government Board Food Inspection Department investigated it (*C. & D.*, 1911, I., 544), and showed that commercial acid phosphates contain from 2 to 50 per cent. of calcium sulphate. It is desirable to get acid phosphates free from, or containing little, sulphate. Acid phosphates are understood to be constituents of 'Cream-powder' and 'Citrolene.'

Borwick's Baking-powder has frequently been analysed, and the results are no credit to chemistry. The oldest analysis

gives its composition as crystallised sodium tartrate 19·12, tartaric acid 6·97, bicarbonate of sodium 38·16, rice-flour 30·58, and moisture 5·07. This is obviously incorrect. Another and more rational result is: Tartaric acid 8 parts, sodium bicarbonate 9 parts, and cornflour 12 parts. The third and best is: Tartaric acid 3 parts, sodium bicarbonate 4 parts, and rice-flour 7 parts.

Royal Baking-powder is the leading one in the United States, and an analysis of it by the Agricultural Department gave the following results:—Sodium bicarbonate 23·61, residual sodium oxide 1·59, ammonium bicarbonate 0·98, potassium bitartrate 53·34, calcium sulphate 0·31, starch 16·34, water 3·83. It would appear from this that the powder may be made by mixing together 60 oz. of cream of tartar, 28 oz. of sodium bicarbonate, 1 oz. of ammonium carbonate, and 16 oz. of cornflour. A teaspoonful of the powder is added to each pound of flour.

Alum Baking-powder.—Chiefly owing to the desire for cheapness, alum is much used in Canada and the United States, instead of tartaric acid and cream of tartar in manufacturing baking-powder. This practice was made illegal in the United Kingdom by the Sale of Food and Drugs Act, 1899, which defines 'food' as 'every article used for food or drink by man, other than drugs or water, and any article which ordinarily enters into or is used in the composition or preparation of human food, and also includes flavouring matters or condiments.' Previous to that it had been held that baking-powder is not food, but since then magistrates have unhesitatingly convicted sellers of alum baking-powder, on the ground that alum is injurious to health. We may, however, note that the points in favour of alum (burnt alum is used) in baking-powder are (1) that the powder remains dry, and does not evolve gas at the normal temperature; (2) in presence of water and flour it reacts with sodium bicarbonate more slowly than cream of tartar. The alum does not remain in the bread as such, but as hydrate of alumina, and each teaspoonful of the powder leaves only about 5 gr. of this

hydrate, so that the physiological action of alum does not follow on eating the bread. The subjoined is the correct formula for the powder :—

Dried ammonia alum . . .	℥viij.
Bicarbonate of sodium . . .	℥viij. ʒij.
Rice-flour	℥xvj.
Mix.	

Ammonia Baking-powder.—The addition of ammonium carbonate to baking-powder is more followed in the United States than in England. This modification has the advantage of giving a lighter bread or pastry than plain baking-powder. Bakers invariably add the carbonate to their best pastries. A quick-firing oven is necessary for such articles, so that the ammonia may be rapidly volatilised, whereby the pastry is made to rise and become spongy. The Royal Baking-powder already mentioned is a good example of these powders. The two following are quoted as bad formulas, the first being too acid, and the second not admissible because alum is in excess :—

I		II	
Potassium bitartrate .	19 oz.	Ammonium carbonate .	6 oz.
Tartaric acid . . .	8 oz.	Tartaric acid . . .	½ lb.
Ammonium carbonate .	1 oz.	Alum	1 lb.
Sodium bicarbonate. .	17 oz.	Sodium bicarbonate .	1⅓ lb.
Cornflour . . .	7 oz.	Potato farina . . .	2 lbs.
Mix.		Mix.	

All the ingredients for baking-powders should be separately and carefully dried before mixing, then sifted several times, and kept in airtight packages. The cream-of-tartar powders keep best, and while they are not considered so brisk as tartaric-acid powders they are more satisfactory than the latter, although not so good as a combination—*e.g.*, No. VI.

It appears from a statement made in 1894 by Mr. W. E. Wadman, an American chemist, that all the substitutes used (in the United States) in the manufacture of baking-powders, in self-raising flours, and directly in baking have monocalcium phosphate ($CaH_4P_2O_8$) as the active ingredient. The same is true of Canada, where, in 1900, it was officially reported that

70 per cent. of the baking-powders sold contained alum, mostly associated with acid phosphate. Mr. Wadman divided the powders into two classes, according to the method of manufacture. First, those known as Leached Goods are prepared by treating calcium phosphate (generally bone-black) with sufficient sulphuric acid to produce monocalcium phosphate, filtering off the calcium sulphate formed in the reaction, crystallising out the phosphate, grinding it with starch, and drying the mixture. The resulting mixture of monocalcium phosphate and starch contains also from 1 to 6 per cent. of free phosphoric acid, with some insoluble phosphates. The other class is known as Sulphate of Lime Base Goods, and is formed by treating pure white bone-ash with the correct amount of sulphuric acid to form the monocalcium phosphate, and drying and grinding the resulting mixture without separation. Like the 'Leached' class, these contain free phosphoric acid and insoluble phosphates, but rarely much, if any, starch; the calcium sulphate is not an adulterant, but an essential part of the mixture, and plays an important part in the reaction of the powder. With powders of the first class the reaction with alkalies mainly results in the formation of $Ca_2H_2P_2O_8$ and Na_2HPO_4; and as both phosphoric acid and calcium monophosphate are readily soluble in cold water, the action takes place in the cold, and dough made with them must be hurried into the oven rapidly if advantage is to be gained from their use. With those of the second class the primary reaction is the same, but on heating to the boiling-point a secondary reaction sets in, probably represented by the equation

$$3Na_2HPO_4 + 3CaSO_4 = Ca_3P_2O_8 + 3Na_2SO_4 + H_3PO_4,$$

which is equivalent to a liberation of fresh carbonic-acid gas, which helps to lighten the dough, because it is gradually evolved as the temperature rises: in this way they are better substitutes than powders of the first class for cream of tartar, which also acts slowly by reason of its much higher solubility in hot than in cold water. [These views have been embodied in an English Local Government Board report. See *C. & D.*, 1911, I., 544.]

The following notes on the leading American baking-powders are by Dr. G. F. Payne, an American pharmacist :—

Name of Baking-powder	Leavening Power or per cent. of Carbonic-acid Gas	Character of Powder	Percentage of Ammonia	Percentage of Sulph. Acid combined as Sulphates	Percentage of Phosphoric Acid
Royal . . .	13·36	Cream of tartar (with tartaric acid)	Trace	Trace	0
Dr. Price's . .	11·82	,,	,,	,,	0
Cleveland . .	13·17	Cream of tartar . .	,,	,,	0
New South . .	12·59	,,	,,	,,	0
Turpin's . .	12·27	,,	,,	,,	0
Dixie . . .	11·90	,,	,,	,,	0
Horsford's Bread Prep.	8·67	Acid phos. of calcium	,,	5·56	26·14
Linden .	12·85	Am. alum, ac. phos. calcium	1·59	14·61	6·31
Campbell . .	11·38	Ammonia alum . .	1·74	15·70	0
One Spoon . .	10·39	,,	2·60	24·29	0
Gem . . .	9·16	,,	0·90	29·04	0

Self-raising Flour is wheaten flour to each pound of which is added as much baking-powder as contains 30 grains of sodium bicarbonate. For a hundredweight of flour 8 oz. of bicarbonate and 18 oz. of cream of tartar (95-per-cent.) are the requisite amounts. According to Dr. Hamill, of the English Local Government Board, many self-raising flours on the English market are made according to the following formula :—

Calcium acid phosphate . . .	6 lbs.
Sodium bicarbonate . . .	3 lbs.
Flour	280 lbs.

Blanemange Powder

Best cornflour . . .	lb. j.
Sago-flour . . .	lb. j.
Oil of lemon . . .	♏x.
Oil of nutmeg . . .	♏v.
Oil of cassia . . .	♏iij.

Mix the oils with an ounce of the sago, gradually add the rest of the powders, and sift twice. The powder may also be flavoured with essence of ratafia instead of the above. Put it up in 1½-oz. packets.

Directions.—Make the contents of this packet into a smooth paste with half a cupful of milk. Dissolve 2 oz. of caster-sugar in a pint of milk and add it, whilst boiling, to the paste, stirring. Transfer to a saucepan, boil for five minutes, and pour into a mould.

Custard-powder is a mixture of good starch with colouring and flavouring. The best colouring is fluid extract of saffron, which is solely used by one eminent manufacturer, while another employs synthetic orange dye. A single grain of this dye is sufficient to colour 2 lbs. of the powder. It should be triturated with half an ounce of milk-sugar until perfectly uniform in colour, then some of the flour added, and again triturated. Meanwhile the flavours should be mixed with some of the flour, then the whole passed several times through a sieve. A properly prepared powder of this kind looks cream colour until it is moistened, then it becomes yellow. The very finest powdered turmeric may also be used if the flavour is not objected to. The following are reliable recipes :—

I

Pulv. oryzæ	lb. ij.
Pulv. marantæ natal.	lb. j.
Ext. croci fluid.	ʒj.
Ol. amygd. essent.	♏xx.
Ol. neroli	♏iij.

Mix the liquids in a mortar with few ounces of rice-flour, until 8 oz. of the latter has been used, sift, and mix with the rest of the flour and arrowroot. Again sift.

II

Oswego cornflour	lb. j.
Powdered turmeric	ʒj.
Oil of bitter almonds	♏x.

Mix.

III

Cornflour	lb. j.
Arrowroot	lb. j.

Azo orange sufficient to colour.

Oil of bitter almonds	♏x.
Oil of nutmeg	♏iij.

Mix.

These powders should be put up in half-ounce packets, this quantity being sufficient for a pint of milk.

DIRECTIONS FOR USE.

The contents of this packet are sufficient to make a pint of custard.

Put the contents of the packet into a basin and pour on it a tablespoonful of water and stir with the spoon to make it into a thin paste. In the meantime boil a pint of milk, into which you have placed two tablespoonfuls (not heaped) of the best granulated sugar (2 oz.), and while the milk is boiling pour it into the basin steadily, stirring well.

A richer preparation can be made by using cream (in whole or part), or two tablespoonfuls of the best condensed milk, in place of as much fresh milk. Instead of fresh milk a small teacupful of condensed milk and four teacupfuls of boiling water may be used.

Egg-powder.—Colour 4 lbs. of No. 1. baking-powder with 6 dr. of powdered turmeric, or with 6 grains of azo-

orange dissolved in rectified spirit. Mix the colouring-matter thoroughly with the powder. In the case of the azo-orange it is advisable to mix an ounce of the flour with each grain of orange and dry at a gentle heat before adding the rest of the powder ingredients by triturating in a mortar. A teaspoonful of the product is to be used with each pound of flour. Other recipes are :—

A

Tartaric acid	ʒxvj.
Sodium bicarbonate	ʒxxj.
Ground rice	lb. iij.
Liquid extract of saffron	ʒj.

Mix.

B

Tartaric acid	ʒviij.
Cream of tartar	ʒxiv.
Sodium bicarbonate	lb. ij.
Rice-flour	lb. iij.

Mix and colour, like A, with saffron.

CULINARY COLOURINGS, ESSENCES, AND FLAVOURINGS

Flavouring essences the preparation of which is not specially indicated in the following pages may be prepared by dissolving 1 oz. of the essential oil in 19 oz. of rectified spirit, and colouring if desired. Turmeric is the common yellow colouring, and is used for lemon, but there are others equally suitable (*see* p. 274). An excellent reddish-brown colour is obtained from red sanderswood, and is used for cinnamon; caramel is the best brown colouring; cudbear gives a magenta better suited than cochineal for fruit essences such as raspberry.

Allspice

Oil of pimento	ʒj.
Caramel	ʒj.
Spirit to	Oj.

Mix, and after standing a day filter.

Almond

Essential oil of almonds	ʒj.
Spirit	ʒxix.

Dissolve.

Cayenne

Tr. capsici, B.P.

Celery

See p. 319; or may be prepared from the essential oil, 1 oz. to 39 oz. of rectified spirit.

Cinnamon

Oil of cinnamon	ʒj.
Tincture of cinnamon	ʒj.
Spirit	ʒxvii.

Mix.

Cloves

Oil of cloves	ʒj.
Caramel	ʒiss.
Spirit to	Oj.

Mix, and after a day filter.

Cochineal.—Difficulties are often experienced in the preparation of cochineal colouring—first, in bringing out the full colour of the dye, which is only possible by the formation of a 'lake' through the influence of alumina; and, second, by the proneness of the liquid to ferment. This latter characteristic is mainly due to the old custom of adding sugar to the liquid in insufficient quantity to make a good syrup. The sugar is absolutely useless in the liquor: it is not wanted by the cook, it has no beneficial action on the colouring-matter, and it is decidedly disadvantageous to the keeping-properties of the preparation. In some formulas which we print it is therefore replaced by glycerine; and should it be desired to make the liquor sweeter, from 5 to 10 gr. of saccharin may be added to each pint. Salt (℥iss. to Oj.) gives piquancy to liquid cochineal and preserves it.

I

Powdered cochineal[1] .	℥ij.
Carbonate of potassium .	℥iij.
Glycerine . . .	℥viij.
Distilled water . .	℥xxiv.

Rub the cochineal and potash together in a large mortar, gradually adding the glycerine, then the water. Allow to stand for two hours, occasionally rubbing; then add the following powder, intimately mixed:—

Cream of tartar . .	℥iij.
Potash alum . . .	℥iij.

When effervescence has ceased filter the liquid and reserve the filtrate. Now wash what remains in the filter with distilled water as long as any appreciable amount of colouring is obtained and evaporate this second filtrate, so that the residue, added to the first, will make 32 fl. oz. If not quite clear, filter or set aside to deposit, and decant.

II

Cochineal (bruised) . .	℥j.
Carbonate of potassium .	℥j.
Water	℥viij.

Mix and heat just below the boiling point for half an hour, then add to it gradually, and with constant stirring

Potash alum . . .	℥j.
Citric acid . . .	℥ss.

powdered and previously mixed. When effervescence ceases remove from the source of heat, filter, and set aside in a stoppered bottle. Wash the marc with hot water, and evaporate the washings until, with the first filtrate, 8 oz. of liquid is obtained; add 1½ oz. of rectified spirit to this, set aside for a day, filter from any deposit, and make up to 12 fl. oz. with glycerine.

The addition of 10 minims of chloroform to each pint of the colouring helps to keep it, but it is unnecessary when

[1] The 'Extra Pharmacopœia' recommends that the cochineal should not be bruised, but simply boiled with the potash and water.

glycerine is used. No. I. is also made by keeping back the glycerine to the end, preparing it with the other ingredients by No. II. way, finally evaporating the clear liquors to 16 oz., and adding glycerine 16 oz. This gives a splendid colour.

It will be observed that potash alum is indicated. The reason for this is that ammonia alum (the kind now generally on the market) has been found by experience to be prejudicial to the colouring. One may easily determine whether an alum is ammonia or potash by rubbing a few grains of it in a small mortar with a few drops of liquor potassæ. If it is ammonia alum the odour of ammonia may be perceived in the mortar. Or the test may be applied by heating in a test-tube. We may quote here the American 'National Formulary' recipe (No. III.), which is excellent, and to this add two formulas for the carmine colouring :—

III

Liquor Coccineus, N.F.

Cochineal in No. 50 powder .	65 gm.	1 tr. oz.
Potassium carbonate	32 gm.	½ tr. oz.
Alum .	32 gm.	½ tr. oz.
Potassium bitartrate	65 gm.	1 tr. oz.
Glycerine .	500 c.c.	8 fl. oz.
Rectified spirit .	32 c.c.	1 fl. oz.
Water to make	1,000 c.c.	16 fl. oz.

Triturate the cochineal intimately with the potassium carbonate and 8 fl. oz. (500 c.c.) of water. Then add the alum and potassium bitartrate successively. Heat the mixture to boiling in a capacious vessel, then set it aside to cool, and add to it the glycerine and the spirit. Filter, and pass sufficient water through the filter to make 16 fl. oz. (1,000 c.c.).

IV

Carmine. . . .	ʒj.
Solution of ammonia .	ʒvj.
Glycerine . . .	ʒxvj.
Water to . . .	ʒxxxij.

Dissolve the carmine in the ammonia solution, add the glycerine and a little water; warm gently until only a faint smell of ammonia is left, and make up to 32 oz. with water.

V

Carmini . . .	ʒj.
Liq. ammon. fort. . .	ʒvj.
Spt. vin. rect. . .	ʒiv.
Chloroformi . . .	ʒss.
Sacch. alb. (in lumps) .	lb. iij.
Aquam destil. ad . .	Oiv.

Rub the carmine down with the ammonia; make the sugar into a syrup with 2 pints of water, and when cold add to the carmine solution; then add the spirit in which the chloroform has been dissolved, and make up to 4 pints with distilled water. Strain through fine muslin.

Of these two carmine formulas we prefer No. IV., which keeps much better than No. V., and is not so ammoniacal. (*See also* Glycerin. Carmini and Liquor Carmini.) When a cochineal colouring is required quickly this form has obvious advantages, but the older-fashioned article made from silver-grain cochineal is the better. Potash solution may be used instead of ammonia solution. Use liquor potassæ, B.P., ℥iss. to carmine ℥j.; otherwise proceed as above directed.

Ginger

Rad. zingib. jam. cont.	45 oz.
Spt. vin. rect.	140 oz.
Sacch. alb.	2¼ lbs.
Sem. cardam. min. contus.	2 oz. 2 dr.

Macerate one month and filter.

Tr. zingib. fort., B.P. 1885, may also be used, but the above is superior for culinary purposes.

Lemon

Grate the outer yellow portion off several lemons, and of the grated rind take 1 oz. and macerate in 19 oz. of rectified spirit for four days; strain. To the strained tincture add oil of lemon 2 oz. Shake occasionally and well for a day. Next day decant the spirituous portion from the undissolved oil. Reject the oil. Add to the tincture ½ oz. of washed kaolin or asbestos and filter. The asbestos filter will do again.

This makes an excellent culinary essence of lemon. A cheaper article may be made by shaking oil of lemon 2 oz. with 18 oz. of spirit, as above directed, decanting, and filtering.

Some make the essence by dissolving the oil in absolute alcohol, an entirely unnecessary and expensive procedure, as the terpenes of the oil are not needed.

Mace

Essential oil of nutmeg	℥j.
Bruised mace	℥j.
Rectified spirit	℥xix.

Macerate for four days and filter.

Nutmeg

Exclude the mace in the last formula.

Orange

Prepared in the same way as essence of lemon, using sweet-orange peel and oil of orange. As the latter is more soluble in rectified spirit, decanting is unnecessary in this case.

Ratafia.—Plain essence of almonds is sometimes given for this, but the correct thing nowadays is

Ol. amygd. essent.	℥j.
Tr. aurantii	℥j.
Spt. rectificat.	℥viij.

M.

The word 'ratafia' is practically all that remains to us of a branch of the culinary art which was highly esteemed a

century ago. There were a host of 'ratafias' then, many of them perfectly innocent of almonds. More for curiosity than utility we reproduce three formulas from a forgotten work which was popular when George the Third was king :—

Receipt for making Red Ratafia, Fine and Soft

Take of the black-heart cherries twenty-four pounds; black cherries, four pounds ; raspberries and strawberries, of each three pounds ; pick these fruits from their stalks and bruise them, in which condition let them continue twelve hours ; press out the juice, and to every pint of it add a quarter of a pound of sugar. When the sugar is dissolved, run the whole through the filtrating bag, and add to it three quarts of clean proof spirits. Then take of cinnamon four ounces ; of mace an ounce ; and of cloves two drachms. Bruise these spices ; put them into an alembic with a gallon of clean proof spirits and two quarts of water, and draw off a gallon with a brisk fire. Add as much of this spicy spirit to your ratafia as will render it agreeable to your palate—about one-fourth is the usual proportion.

Ratafia from Peaches

After a learned disquisition on peaches the author says : An excellent cordial may be easily made in the following manner :—

Take your peaches, bruise them, and instantly strain out their juice through a piece of strong linen. In this juice, without any mixture of water, dissolve your sugar ; and when the sugar is melted add the quantity of spirit. No spices must be used in this ratafia, the fine flavour of the peach being far preferable to all spices in the world. The quantity of either the sugar or spirit may be augmented or lessened according to your own judgment, or in proportion to the price of your ratafia. As soon as the spirit is added to the dulcified juice of the peaches, the whole must be filtrated through a flannel bag, put into bottles close stopped ; for the fine flavour of the peach will soon be lost unless the bottles are very well corked.

Receipt for making Ten Gallons of Common Ratafia

Take of nutmegs, eight ounces ; bitter almonds, ten pounds ; Lisbon sugar, eight pounds ; ambergris, ten grains ; infuse these ingredients three days in ten gallons of clean proof spirit and filter through a flannel bag for use. The nutmegs and bitter almonds must be bruised, and the ambergris rubbed with the Lisbon sugar in a marble mortar before they are infused in the spirit.

Spice Essence

One of powder to 10 of S.V.R.

Strawberry

This and similar fresh fruit essences are made by covering the fruit with rectified spirit (1 pint to 4 to 6 lbs. of fruit) and macerating for ten days. Five per cent. of artificial essence is then added and the liquor filtered, magenta being added to bring up the colour.

Vanilla

(*See* p. 182.)

ARTIFICIAL FRUIT ESSENCES

The tables here given are of some historic interest. The second of them was published in 1866, having been compiled by Kletzinski apparently from the original formulas of Wittstein. In 1879, the late Professor J. M. Maisch, of Philadelphia, stated that 'several very important errors had crept into the formulæ,' and he accordingly republished Wittstein's, which are embodied in the first table :—

—	Apple	Apricot	Blackcherry	Cherry	Cider	Currant	Grape	Jargonelle	Lemon	Melon	Orange	Peach	Pear	Pineapple	Plum	Raspberry	Strawberry
Acid, benzoic	—	—	2	1	—	1	—	—	—	—	—	—	—	—	—	—	—
Acid, oxalic	1	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Acid, œnanthic	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—
Acid, succinic	—	—	—	—	—	1	3	—	1	—	—	—	—	—	—	1	—
Acid, tartaric	—	1	—	—	—	5	5	—	10	—	1	—	—	—	—	5	—
Alcohol, amylic	—	2	—	—	4	—	—	—	—	—	—	2	—	—	—	—	—
Aldehyde	2	—	—	—	—	1	2	—	2	2	2	2	—	—	5	1	—
Chloroform	1	1	—	—	4	—	2	—	1	—	2	—	—	—	—	—	—
Ether, acetic	1	—	10	5	—	5	—	—	10	—	5	5	5	—	5	5	5
Ether, amyl-acetic	—	—	—	—	4	—	—	20	—	—	1	—	2	1	—	—	3
Ether, amyl-butyric	—	1	—	—	4	—	—	—	—	—	—	—	—	10	—	1	2
Ether, amyl-valerianic	10	—	—	—	8	—	—	—	—	—	—	—	—	—	—	—	—
Ether, benzoic	—	—	5	5	—	1	—	—	—	—	1	—	—	—	—	1	—
Ether, butyric	—	10	—	—	—	—	—	—	—	4	1	5	1	5	2	1	5
Ether, formic	—	—	—	—	—	—	2	—	—	1	1	5	—	—	1	1	1
Ether, methyl-salicylic	—	—	—	—	—	—	1	—	—	—	1	—	—	—	—	1	1
Ether, nitrous	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—	1	1
Ether, œnanthic	—	1	—	1	—	—	10	—	—	—	—	—	—	—	—	1	—
Ether, sebacylic	—	—	—	—	—	—	—	—	—	10	—	1	—	—	—	1	—
Ether, valerianic	—	5	—	—	—	—	—	—	—	5	—	5	—	—	—	—	—
Glycerine	4	4	—	3	—	—	10	—	5	3	10	5	2	3	8	4	2
Oil, lemon	—	—	—	—	—	—	—	0·1	10	—	—	—	—	0·1	—	—	—
Oil, orange	—	—	—	—	—	—	—	0·2	—	—	10	—	—	0·2	—	—	—
Oil, peach kernel	—	—	2	—	—	—	—	—	—	—	—	5	—	—	4	—	—

Notwithstanding Professor Maisch's statement, some of these formulas are perfectly unworkable. The figures indicate parts by measure for 100 parts of rectified spirit (in the original formulas the parts of acid were to be taken as saturated alcoholic solutions of such acids). The raspberry essence is particularly poor. We therefore add Kletzinski's original table, which gives the formulas that are, on the whole, better than those of Wittstein. Kletzinski explained that the figures in each column represent in cubic centimetres the quantities

to be added to 100 c.c. of alcohol (90-per-cent.), the 'acids' being alcoholic solutions of the same *saturated in the cold.*

Fruit Name	Chloroform	Ethyl Nitrite	Aldehyde	Ethyl Acetate	Ethyl Formate	Ethyl Butyrate	Ethyl Valerianate	Ethyl Benzoate	Ethyl Œnanthylate	Sebacic Ether	Methyl Salicylate	Amyl Acetate	Amyl Butyrate	Amyl Valerianate	Oil of Orange	Tartaric Acid	Oxalic Acid	Succinic Acid	Benzoic Acid	Glycerine
Apple	1	1	2	1	—	—	—	—	—	—	—	—	—	—	10	—	1	—	—	4
Apricot	1	—	—	—	—	10	5	—	1	—	2	—	1	—	—	—	1	—	—	4
Blackcherry	—	—	—	10	—	—	—	5	2	—	—	—	—	—	—	—	1	—	2	—
Cherry	—	—	—	5	—	—	—	5	1	—	—	—	—	—	—	—	—	—	1	3
Gooseberry	—	—	1	5	—	—	—	1	1	—	—	—	—	—	—	5	—	1	1	—
Grape	2	—	2	—	2	—	—	—	10	—	1	—	—	—	—	5	—	3	—	10
Lemon	1	1	2	10	—	4	5	—	—	10	—	—	—	10	—	10	—	1	—	5
Melon	—	—	2	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3
Orange	2	—	2	5	1	1	—	1	—	1	10	—	—	—	10	1	—	—	—	10
Peach	—	—	2	5	5	5	5	—	5	1	2	—	—	—	—	—	—	—	—	5
Pear	—	—	—	5	—	—	—	—	—	—	10	—	—	—	—	—	—	—	—	10
Pineapple	1	—	1	—	—	5	—	—	—	—	—	—	10	—	—	—	—	—	—	3
Plum	—	—	5	5	1	2	—	—	4	—	—	—	—	—	—	—	—	—	—	8
Raspberry	—	1	1	5	1	1	—	1	1	1	1	1	1	—	—	5	—	1	1	—
Strawberry	—	1	—	5	1	5	—	—	—	—	1	1	1	—	—	5	—	1	—	4

In Kletzinski's table amyl alcohol, oil of persicot or peach (essential), and oil of lemon occur, but without quantities. They are therefore not reproduced here ; indeed, the artificial essences of lemon and orange, as given, may be regarded as mere curiosities, researches during the past twenty years having demonstrated that the flavour-composition of the oils is more aldehydic than ethereal. On this point we commend to compounders the remarks under Synthetic Perfumes, which reflect more clearly modern views in regard to artificial essences. Compounders should also bear in mind that the ethers of fifty years ago may have differed materially from the esters now produced. In the interval, knowledge in this matter has also greatly advanced. An 'ether,' properly speaking, is an alcohol in which the hydroxyl group is replaced by oxygen, while in an ester the group is replaced by an acid radicle. Thus :—

$$\begin{matrix} C_2H_5 \\ C_2H_5 \end{matrix}\!\!\rangle O$$

Ethyl Ether.

$$C_2H_5.C_2H_3O_2$$

Ethyl Acetate or *Ethyl Acetic Ester.*

In the old days the esters were rarely pure; now processes are improved, and pure products result, which may not in all cases give in combination the same flavour that the impure bodies provided.

Professor Maisch stated that in compounding these essences cherry, currant, raspberry, and strawberry essences are coloured with aniline red (fuchsin), a little caramel being added to neutralise the bluish tint. Raspberry and strawberry essences are much improved by the addition of 10 to 20 per cent. of tincture of orris-root. Jargonelle, cider, pine-apple, lemon, orange, and pear essences are coloured with saffron. The following are more modern formulas :—

Banana

Essence of pear	ʒij.
Butyric ether	ʒij.
Oil of lemon	ʒiiss.
Ethyl benzoate	ʒss.
Tincture of orris to	Cong. j.

Mix and filter.

Blackberry

Acetic ether	ʒss.
Butyric ether	ʒj.
Tincture of orris	Oj.

Mix, and colour with magenta and caramel.

Cherry

Otto of orris	ʒj.
Essence of vanilla	ʒiiss.
Essence of almonds (1 in 20)	ʒss.
Butyric ether	ʒij.
Acetic ether	ʒj.
Rectified spirit to	Oj.

Mix.

Gooseberry

Oil of lemon	ʒiij.
Butyric ether	ʒj.
Spirit of chloroform	ʒj.
Amyl acetate	ʒij.
Acetic ether	ʒij.
Tincture of orris to	Oiv.

Mix and filter.

Damson

Essence of grape	Oj.
Essence of plum	Oiij.
Caramel	ʒss.
Tincture of saffron	ʒij.

Mix and filter.

Greengage

Aldehyde, butyric ether, amyl acetate, and œnanthic ether, of each	ʒij.
Acetic ether	ʒiv.
Tincture of lemon	Oj.
Rectified spirit	Ov.
Water to	Cong. j.

Mix.

Grenadine

Oil of orange	ʒj.
Œnanthic ether	ʒij.
Butyric ether	ʒij.
Essence of vanilla	ʒxij.
Water	Oj.
Rectified spirit to	Cong. j.

Mix.

Nectarine

Essence of pineapple	ʒiss.
Oil of lemon	ʒiij.
Essence of vanilla	ʒiij.
Rectified spirit to	Oj.

Mix and filter.

Pineapple

Ethyl acetate	ʒss.
Amyl acetate	ʒss.
Ethyl butyrate	ʒss.
Chloroform	ʒj.
Proof spirit to	Oj.

Mix.

Pistachio Nut

Oil of orange	ʒvj.
Amyl acetate	ʒiv.
Oil of bitter almonds	ʒv.
Butyric ether	ʒv.
Acetic ether	ʒix.
Rectified spirit	Cong. j.
Water to	Cong. iss.

Mix.

Prune

Oil of wintergreen	ʒij.
Oil of lemon	ʒvj.
Amyl acetate	ʒj.
Butyric ether	ʒij.
Essence of vanilla	ʒx.
Rectified spirit	Ov.
Water to	Cong. j.

Mix.

Raspberry

Ethyl acetate	ʒvj.
Amyl acetate	ʒj.
Spirit of nitrous ether	ʒj.
Tartaric acid	ʒj.
Tincture of orris	ʒiij.
Glycerine	ʒiij.
Proof spirit to	Oj.

Mix and colour.

Noyeau

Oil of petitgrain	ʒss.
Oil of bitter almonds	ʒiiss.
Rectified spirit to	Oj.

Mix.

Red Currant

Essence of raspberry	ʒx.
Cochineal colouring	ʒj.
Tincture of orris	ʒv.
Rectified spirit	Oij.

Mix and add

Red-currant juice	Ovj.

Mix.

Strawberry

Ethyl acetate	ʒiij.
Amyl acetate	ʒss.
Tartaric acid	ʒj.
Spirit of nitrous ether	ʒj.
Tincture of orris	ʒiij.
Glycerine	ʒiij.
Proof spirit to	Oj.

Mix and colour.

Walnut

Aldehyde	ʒss.
Oil of bitter almonds	ʒj.
Œnanthic ether	ʒj.
Essence of vanilla	ʒviij.
Tincture of orris	ʒxvj.
Rectified spirit to	Cong. j.

Mix.

NOTE.—These essences are all the better for being set aside for a few months, then filtering. (*See also* Supplementary Chapter.)

Artificial Vanilla Essence.—Now that synthetic vanillin is obtainable at a cheap rate, old-fashioned substitutes for vanilla, such as the artificial essence made from Tonka bean and Peru balsam, are not much use, but we give a formula:—

Powdered Tonka bean	ʒj.
Peruvian balsam	ʒj.
Oil of sweet orange	ʒss.
Tincture of orris	ʒij.
Essence of musk	ʒss.
Rectified spirit	ʒiv.
Water	ʒij.

Mix the balsam and light carbonate of magnesium ʒij. with rectified spirit ʒj.; add the other ingredients in their order, and finally the Tonka bean. Macerate for eight days and filter.

The following are the manufacturers' directions for making Vanillin Sugar:—

Dissolve 3½ oz. of vanillin crystals in 17 oz. of rectified spirit and add to 9 lbs. of finely powdered white sugar, stirring gently during the mixing. Let the sugar dry in the open air in an earthenware vessel, sift, and keep it in closed tins.

This quantity of vanillin sugar is said to be stronger and to have a finer aroma and taste than the same weight of vanilla beans, and may be used in the same way as the latter.

For Liqueurs and Alcoholic Solutions vanillin will be found invaluable. It imparts a delicious bouquet to all preparations so treated. One grain per gal. for alcohol, ½ gr. per gal. for brandy, is recommended. For liqueurs the quantity is regulated according to taste and requirements. *See also* p. 241.

ESSENCE OF RENNET

Syn. *Liquor Seriparus*

The stomachs of sucking animals secrete a peculiar ferment which has the property of coagulating milk by the separation of casein, which entangles the fat, thus forming a rich curd, while the liquid residue, or whey, contains the sugar, salt, and albumin of the milk. The ferment is sometimes called 'rennin,' and is also found associated with proteolytic ferments in gastric juices, and in the pancreas of the calf, sheep, pig, and other animals, as well as in the juice of the pineapple and other plants. The milk-curdling ferment secreted by the calf's stomach, generally used in making essence of rennet, is chymosin, and that of the pig is parachymosin. The curdling action is exerted at blood heat upon milk which has not previously been boiled, for in the latter case part of the phosphates in the milk combine with some of the casein, and prevent coagulation. This may, however, be overcome by ensuring a slight trace of lactic acid (1 in 1,000) in the milk, whereby the phospho-casein compound is broken up. It is upon this fact that the old-fashioned idea of making essence of rennet with sour milk seems to be based. At all events, it was not until 1885 that Engling definitely proved the fact by research. Before then the addition of lactic acid to essence of rennet had been recommended in *The Chemist and Druggist.*

Calves' Stomachs or Vells are now a regular commercial article, and may be obtained all the year round. For commercial purposes the stomachs are cleaned and filled with common salt. The latter becomes charged with the ferment, and should not be rejected. Generally the vell and salt may be weighed together, and the two reckoned as half and half.

Maceration of the rennet with the menstruum for a month or six weeks is generally recommended. This is ridiculous. The ferment dissolves in the menstruum quickly (in from four to seven days), and longer maceration makes filtration more difficult. We therefore recommend the following method of operation :—(1) Macerate the rennet as directed in the formulas for a week; (2) strain and add six drops of glycer. acid. tannic. to each pint, shake, and set aside for three days; (3) decant the clear portion carefully and filter the sediment.

I

Two salted rennets.

Water	Cong. j.
Salt	ʒxvj.
Glycerine	ʒx.
Boric acid	ʒij.

Let stand three days and filter.

If at the end of three days the liquor is strained and 2 oz. of fullers' earth or kieselguhr added, most of it can be decanted clear a few days later.

The advantage of using the dried rennets is that this quantity will filter in about an hour.

II

One rennet.

Salt	ʒiv.
Rectified spirit	ʒiv.
Glycerine	ʒij.
Syrupy lactic acid	ʒj.
Chloroform	♏x.
Water	ʒxxxv.

Chop the rennet small, macerate for four days, decant, and filter the dregs. Should measure ʒxl.

III

Dried vells, shaken free from salt and cut small 24 lbs.

Salt	12 lbs.
Rectified spirit	4 gals. 32 oz.
Sherry	1 gal.
Water	18 gals.

Macerate for a week, strain, and set aside to clear, adding a few ounces of fullers' earth before so doing. Decant and filter.

IV

Fresh calf's rennet	100 gm.	3 tr. oz.
Sodium chloride	40 gm.	580 gr.
Rectified spirit	190 c.c	6 fl. oz.
Water	810 c.c.	26 fl. oz.

Dissolve the sodium chloride in the water, add the spirit, and macerate the rennet in the mixture during three days under frequent agitation. Then filter.

The last formula is 'Liquor Seriparus,' N.F. (Liquid Rennet). The second formula is the best for use on a small

scale, and by a slight modification one can make essence by it in five minutes. The modification is : Omit the rennet and the salt, and use instead 2 oz. of rennet-powder ; shake with the mixed liquids, and filter. It is better to stand overnight. The first and third formulas are used by manufacturers ; but the whole of the formulas are typical, and are selected from a number which may differ in respect to flavour and colour, but are the same in regard to curdling power. The habit of flavouring essence of rennet is not general, but in some districts it is preferred. The following are the mixtures to use :—

I

Oils of pimento, bitter almonds, nutmeg, cloves, and lemon, of each . ʒj.
Mix.

II

Oil of cloves . . . mx.
Oil of nutmegs . . mx.
Essential oil of almonds . mv.
Mix.

Twenty minims of either of these is sufficient for a pint of the essence of rennet. The oils should be dissolved in spirit, and fullers' earth or kaolin must be used in filtering.

Cheese Rennet is concentrated essence of rennet.

Rennet Powder is a mixture of salt and the curdling ferment, the latter being made in a similar way to pepsin. This should not, however, be confounded with commercial Rennin (P., D. & Co.), of which one grain curdles one pint of milk.

Potted Meats

The first three formulas are curiosities which *The Chemist and Druggist* obtained from a pharmaceutical chemist who, while down in his luck, took an engagement with a potted-meat man.

The manufacture is very simple, and can be profitably worked on a very small scale. The meats may be put up either in tins, earthenware pots, or glass jars ; the first involve most trouble, as they have to be soldered, and afterwards boiled to expel the air.

For the actual manufacture the apparatus required is a small mincing-machine and a pestle and mortar. The small maker will find it convenient to make the Australian tinned meats the basis of all the various kinds.

It is well to note that the sale of such preparations under misleading names is amenable to punishment under the Merchandise Marks Act.

Potted Beef

Australian beef . . 7 lbs.
Ground rice . . . 1½ lb.
Powdered cayenne . . q.s.
Powdered mace . . q.s.

Mix all together roughly, then pass through mincing-machine ; beat up in mortar, and pot.

Potted Hare

Australian beef . .	4 lbs.
Australian rabbit . .	3 lbs.
Ground rice . . .	2 lbs.
Powdered savoury herbs .	q.s.
Cloves	q.s.
Allspice	q.s.

Proceed as above.

Potted Ham

Australian beef . .	3 lbs.
Boiled ham . . .	3 lbs.
Ground rice . . .	1½ lb.
Allspice	q.s.

Proceed as above.

Ordinary potted meats in jars are made thus: Cook the fresh meat until tender, cool, remove bone and sinew, chop fine, and beat into a paste in a marble mortar, adding gradually a suitable spice and a little melted dripping. Press the paste tightly into clean jars, pour a layer of melted butter or pure mutton fat over the surface to the depth of a quarter of an inch, and cover.

Potted Meat Flavourings

For 'potted brawn' the following flavouring is used:—To 40 lbs. of meat add salt 1½ lb., white pepper 3 oz., coriander 3 oz., nutmeg 1 dr., onion ¼ oz.

For 'potted head' (Scotch), to each 10 lbs. add salt 2½ oz., black pepper 1 oz., boric acid ¼ oz.

Swiss potted head (made from ears, tongue, and feet of the pig with veal) is flavoured with salt 2½ oz., black pepper ½ oz., cloves ⅓ oz., ginger ⅙ oz. to each 10 lbs.

Table-jellies

Lemon

White sugar . . .	16 lbs.
Glucose	8 lbs.
Gelatin	3½ lbs.
Water	2 qts.
Citric acid . . .	1½ oz.
Oil of lemon . . .	1 oz.
Salicylic acid . .	½ oz.
Orange colouring .	a sufficiency

Soak the gelatin until soft in sufficient water to cover it. Boil the sugar and half the glucose in water to a temperature of 245° F.; remove the pan from the fire and gently stir in the remainder of the glucose, the gelatin, and the acid. Let the pan remain a short time, then skim off the top; next add the oil of lemon, previously mixed with 4 oz. of rectified spirit. Run the mixture into tins, and when cold put into a warm cupboard for a few days to mature, then cut.

Orange.—Oil of orange ½ oz., citric acid 1 oz., and orange-flower water 8 oz.

Raspberry.—The same proportions of acid, flavour, and colouring as for strawberry.

Strawberry.—Use ½ oz. citric acid, essence of strawberry 8 oz., and cochineal colouring a sufficiency.

Use other essences similarly.

Dust the squares with powdered glucose and rice-flour equal parts. To the dusting-powder 5 per cent. of boric acid may be added.

FOOD-PRESERVATIVES

The preservation of food is still to a large extent an empirical practice, so far as one can judge from the sale of preservatives, for in some cases the articles used to-day are the same as were used by our grandfathers in days when bacilli and microbes were unknown. On the other hand, the sale of preservatives

has enormously increased since Pasteur conclusively demonstrated that spontaneous generation is fallacious, and that floating matter in the air is the cause of decay and putrefaction. The new trade is in new products, the most notable being boric acid, formaldehyde, salicylic acid, and the acid sulphites of alkali and earth bases.

A Departmental Committee appointed by the Board of Agriculture (England) made in 1901 the following recommendations in regard to the use of preservatives and colouring-matters in foods :—

(1) To prohibit formaldehyde entirely.
(2) To limit the quantity of salicylic acid to 1 gr. per pint or pound of food.
(3) To prohibit the addition of colouring or preservative to milk (making such action an offence under the Sale of Food and Drugs Acts).
(4) That only boron preservatives may be added to cream in amount not exceeding 0·25 per cent.
(5) The same preservatives be permitted for butter, but not exceeding 0·5 per cent.
(6) To prohibit preservatives in infants' and invalids' dietetic preparations.
(7) To prohibit the use of copper in preserved foods.
(8) To form a court of reference or give more power to the Local Government Board to exercise supervision over the use of preservatives and colouring-matters in food.

These recommendations have been given effect to as regards milk and cream only by Regulations of the Local Government Board (*C. & D.*, 1912, II., 259), the addition of any preservative substance to milk and cream (containing less than 35 per cent. by weight of milk fat) being prohibited. The Regulations permit of the addition of boric acid, borax, or hydrogen peroxide to cream containing more than 35 per cent. of milk fat, if labelled 'Preserved cream. Contains boric acid [or borax] — per cent.,' or 'Preserved cream (peroxide),' the size of the labels and of the type being prescribed.

The United States Department of Agriculture in 1903 determined the effects on digestion and health of, *inter alia*, boric acid and borax. Twelve men were selected, who for a year had a varied diet. During part of the time the food was free from preservatives, and at another time it contained boric acid or borax. The results are fully detailed in Bulletin

No. 84 of the Board, and summarised in Circular No. 15. The following are the general conclusions:—

EFFECT OF BORIC ACID AND BORAX UPON GENERAL HEALTH

The most interesting of the observations which were made during the progress of the experiments was in the study of the direct effect of boric acid and borax, when administered in food, upon the health and digestion. When boric acid, or its equivalent in borax, is taken into the food in small quantities, not exceeding ½ gram (7½ grains) a day, no notable effects are immediately produced. The medical symptoms of the cases in long-continued exhibitions of small doses, or in large doses extending over a shorter period, show in many instances a manifest tendency to diminish the appetite and to produce a feeling of fullness and uneasiness in the stomach, which in some cases results in nausea, with a very general tendency to produce a sense of fullness in the head, which is often manifested as a dull and persistent headache. In addition to the uneasiness produced in the region of the stomach, there appear in some instances sharp and well-located pains, which, however, are not persistent. Although the depression in the weight of the body and some of the other symptoms produced persist in the after-periods, there is a uniform tendency manifested after the withdrawal of the preservative towards the removal of the unpleasant sensations in the stomach and head above mentioned.

The administration of boric acid to the amount of 4 or 5 grams per day, or borax equivalent thereto, continued for some time results in most cases in loss of appetite and inability to perform work of any kind. In many cases the person becomes ill and unfit for duty. Four grams per day may be regarded, then, as the limit of exhibition beyond which the normal man may not go. The administration of 3 grams per day produced the same symptoms in many cases, although it appeared that a majority of the men under observation were able to take 3 grams a day for a somewhat protracted period and still perform their duties. They commonly felt injurious effects from the dose, however, and it is certain that the normal man could not long continue to receive 3 grams per day.

In many cases the same results, though less marked, follow the administration of borax to the extent of 2 grams, and even of 1 gram, per day, although the illness following the administration of borax and boric acid in those proportions may be explained in some cases by other causes, chiefly grippe.

The administration of borax and boric acid to the extent of ½ gram per day yielded results markedly different from those obtained with larger quantities of the preservatives. This experiment, conducted as it was for a period of fifty days, was a rather severe test, and it appeared that in some instances a somewhat unfavourable result attended its use. On the whole, the results show that ½ gram per day is too much for the normal man to receive regularly. On the other hand, it is evident that the normal man can receive ½ gram per day of boric acid, or of borax expressed in terms of boric acid, for a limited period of time without much danger of impairment of health.

It is, of course, not to be denied that both borax and boric acid are recognised as valuable remedies in medicine. There are certain diseases in

which these remedies are regularly prescribed, both for internal and external use. The value which they possess in these cases does not seem to have any relation to their use in the healthy organism except when properly prescribed as prophylactics. The fact that any remedy is useful in disease does not appear logically to warrant its use at any other time.

It appears, therefore, that both boric acid and borax, when continuously administered in small doses for a long period, or when given in large quantities for a short period, create disturbances of appetite, of digestion, and of health.

The Action of Preservatives.—Some chemicals owe their influence to a purely neutralising effect. For example, if milk be rendered distinctly alkaline with sodium bicarbonate it keeps without curdling for two days, and this circumstance is largely taken advantage of by milk-sellers. Here the action of the lactic bacillus is not affected, but the first results of that action, whereby lactic acid is set free, are neutralised, and as curdling of milk is the direct result of a certain percentage of lactic acid, this point is not allowed to be reached when the bicarbonate is used. But we cannot call sodium bicarbonate a true preservative or antiseptic. To that class boric acid belongs because it is a decided bactericide, and it—or any other tasteless, odourless, and harmless substance which, when added in small quantity to food, prevents the changes due to bacterial life—is an adequate adjunct. There are comparatively few chemical substances which are not preservatives more or less. For example, nearly all the chlorides and sulphates of the alkalies and earths are decidedly efficient bactericides, their power varying ; but whether the variation accords to any law or not has not yet been sufficiently determined. Between these and the most powerful of antiseptics—viz., mercuric chloride—there is a multitude of substances which are of proved value, but the utility of which is determined by the characteristics of the antiseptics themselves. Comparatively few antiseptics are adapted for use in the preservation of food and liquors. These are borax and boric acid, salicylic acid, acid sulphites or sulphurous acid, formalin, nitre, and a few others of less importance. In the section on disinfectants (p. 396) will be found some notes on the relative power of various substances.

Boric Acid as a Preservative.—Although it has been experimentally proved that boric acid alone is more effective as a bactericide than a mixture of boric acid and borax, there are few popular preservatives of this class which are not mixtures such as that indicated. The pure acid should in preference be used for Preserving Butter, the directions in this case being to mix a dessertspoonful of the powdered acid (say, 1 oz.) with 4 to 8 oz. of common salt, and knead this into 14 lbs. of fresh butter. The quantity of salt to be used depends upon the length of time the butter is to be kept. Most of the foreign fresh butter imported into England contains boric acid. For Preserving Fish a mixture of the acid ¾ lb. and common salt 1½ lb. is enough for 1,000 herrings, and other fish proportionately. For Preserving Butchers' Meat the acid alone is not so efficient as the mixtures afterwards referred to. As to Milk-preservation the use of sodium bicarbonate may first be noted. Dairy farmers use the bicarbonate by rule of thumb, sometimes adding too little or too much of the alkali; and to obviate that Mr. Stokes has suggested a test with compressed tablets, each of which represents so much lactic acid (0·1 per cent.) when added to a certain quantity of milk. One part of sodium bicarbonate almost neutralises 1 part of lactic acid. Perfectly fresh milk is not acid, but it contains various micro-organisms, including *Bacillus acidi lactici*, which begin to decompose the milk when it is drawn from the cow, and within forty-eight hours produce sufficient acids (1 per cent.) to coagulate the milk at the normal temperature. It is unnecessary to anticipate this degree of acidity, for in practice a teaspoonful of sodium bicarbonate to 10 gals. of fresh milk suffices for its preservation. Perfectly fresh milk contains about 50,000 bacteria per cubic centimetre, and at 70° F. the number may grow to 800,000 in twelve hours, after that growing at a terrific rate. This means decomposition of the milk constituents—sugar, fat, and proteids. Formerly, decomposition of the sugar only was thought of, and bad milk was said to cause 'lactic' diarrhœa; but Metchnikoff's observations on *Bacillus acidi lactici* show that it is not pernicious—it is called, in fact, the bacillus of long life—and we must regard

the other products of bacterial decomposition of milk as the harmful elements; alkalies do not remove these, but rather assist in their assimilation. There are many forms of the Boric-acid Preservative, but the following two recipes are typical and reliable:—

I		II	
Boric acid . . .	4 parts	Boric acid . . .	3 parts
Borax	4 parts	Sodium bicarbonate .	1 part

Mix the powders, and allow to stand for twenty-four hours in the air, when they become damp. Dry and powder.

The following is a suitable label to use:—

MILK, CREAM, BUTTER, AND FOOD PRESERVER.

Prevents Sourness in Liquids.—Prevents Taints in Provisions.

DIRECTIONS.

To prevent Milk and Cream from turning sour in hot, close, or thundery weather, one dessertspoonful placed at the bottom of the pail before milking is commenced will be sufficient for three gallons—the milking will rapidly and thoroughly dissolve it; for a pint of milk a pinch may be used.

For Butchers' Meat or Fish, paint over with a Solution (a tablespoonful of Preserver dissolved in a pint of water), or wrap in cloths that have been dipped in the Solution, and wash off before cooking.

The Preserver should be used in the same way for Game, Poultry, Rabbits, &c., preserving them for several days in the hottest weather. Butter and Eggs should be covered with a Solution (a teaspoonful of Preserver to a pint of water).

To preserve Butter for winter consumption, three tablespoonfuls of the Preserver and six tablespoonfuls of salt should be well beaten into every fourteen pounds of Butter. Then press the Butter into an earthenware vessel, glazed inside, and cover it with a solution of six tablespoonfuls of Preserver and twelve tablespoonfuls of Salt, in one gallon of water.

To prevent Sourness in Liquids use the Preserver in the same proportion as ordered for milk.

Preserving Eggs.—A bath of melted paraffin is used for preserving eggs; so is hot milk of lime—both acting, doubtless, by destroying surface bacteria and coagulating a thin layer of the albumin inside the shell. Another good old plan is to dissolve an ounce of cream of tartar in a gallon of boiling water, and add 2 oz. of slaked lime. Set aside until cold, and put the eggs in the clear solution, where they are to be kept until wanted.

These methods have now largely given place to water-glass, or so-called soluble sodium silicate ($4SiO_2,Na_2O$), about which the Board of Agriculture have prepared a pamphlet (No. 83), which may be obtained post free on application to the Secretary of the Board, 4 Whitehall Place, London, S.W. Water-glass is sold retail in 1-lb. and larger size lever-top tins. Wholesale the sp. gr. 1·700 quality is obtainable in 2-cwt. casks at about 9*s.* per cwt., and it is diluted with hot distilled water to weigh 13 or 14 lbs. to the gallon (*i.e.*, sp. gr. 1·300 or 1·400), which is then suitable for putting up in bottles or tins. So thinned, the water-glass mixes easily with cold water, and thus saves housewives a great deal of trouble. The eggs are generally preserved by immersing in a liquid made by mixing 1 lb. of 1·400 silicate with a gallon of water (as indicated on the annexed label), but it is more rational, and on the

PREPARED SOLUTION OF WATER-GLASS.

The most efficient and inexpensive medium

FOR PRESERVING EGGS.

This prepared solution mixes at once with cold water and saves the trouble of melting, which is necessary with ordinary water-glass.

It is colourless and without smell, and can impart no unpleasant flavour to the eggs.

This quantity when mixed with a gallon of cold water will cover about eighteen dozen of eggs.

An earthenware glazed crock is a suitable vessel for storage of small quantities of eggs, and thoroughly cleaned barrels or tubs of various sizes serve the purpose for larger quantities.

Each egg should be packed to rest on its pointed end.

The eggs should be completely immersed in the liquid, and if any float a plate or saucer should be laid upon them to keep them under the liquid.

It is desirable to keep the vessel packed with eggs in a cool place.

The eggs thus stored will remain good for the better part of a year, at least.

NOTE.—When the eggs are taken from the solution for the purpose of boiling, the large end, shell only, should be pricked several times with a sharp pin. This will prevent the shells cracking in the process of cooking.

whole better, to varnish the eggs with the 1·400 silicate, dry, and pack the eggs away in boxes to be used as required. For

the liquid-immersion method the best receptacles for packing are 7-lb. or 14-lb. earthenware jars, with bungs or earthenware lids to keep the water from evaporating.

Salicylic Acid.—The following solution is the handiest form for using salicylic acid as a preservative for meat and beverages :—

Acetic acid	℥j. ʒv.
Salicylic acid	ʠxx.
Carbonate of potassium	ʒj.
Glycerine	℥iij.
Water to	℥x.

Add the carbonate to the acetic acid and form a neutral solution ; to this add the salicylic acid and the glycerine, dissolve, and make up to 10 oz. with distilled water. Add 10 drops of caramel and filter.

Each fluid drachm of this solution contains 5 gr. of salicylic acid. From one to two teaspoonfuls of it may be added to each gallon of beer, syrup, or other liquid. For brushing meat use a mixture of a teacupful in a gallon of water.

The following is a summary of directions for the use of salicylic acid formerly issued by the manufacturers :—

Taint on Meat, Poultry, and Game can be removed by either watering and washing the meat in a lukewarm solution of salicylic acid (3 to 4 teaspoonfuls of acid to 2 quarts of water), or by adding a small pinch of the dry acid in powder during the cooking.

To keep meat from becoming high or tainted for several days : Place it for twenty or thirty minutes in an aqueous solution of 1 oz. of salicylic acid to 1 gal. of water. Rub into the surface of the meat some dry salicylic acid, particularly about the bony and fatty parts ; the meat to be afterwards cleaned before cooking.

Milk.—A third of a teaspoonful (or, if the weather is very warm, a little more) of the acid to each quart of milk delays curdling for thirty-six hours.

Butter, washed with an aqueous solution ($\frac{1}{2}$ oz. of acid to a gallon of water), or kept in it, or wrapped in cloths soaked in this solution, keeps fresh for a very long time. Butter already rancid can be improved by treatment with a solution, 1 oz. of acid to 1 gal. of water, followed by washing in pure water.

Jams, Jellies, Preserves, and Pickles of every description, made in the usual way, but with the addition of about 1 dr. of salicylic acid to every 4 lbs., keep sound longer than usual, fermentation and mouldiness being prevented.

Eggs can be kept for a long time by being placed for half an hour in a cold weak spirit-solution of the acid, then allowed to dry in the air, and kept in a cool place.

Meat-preservers.—Many proprietary preparations are sold for preserving butchers' meat, especially in the summer time. Some of these are simply solutions of calcium bisulphite, sodium bisulphite, or potassium metasulphite. The first-named is most used, and is obtainable from chemical manufacturers by the gallon. But there are also solutions and powders which are generally innocent of sulphurous acid, as shown by the following formulas based upon analyses made by continental chemists :—

Barmenit	**Berlinit**	
Borax,	Borax	℥x.
Common salt . of each equal parts.	Boric acid . . .	℥j.
Mix.	Common salt . . .	ʒvj.
	Mix.	

The following abbreviated directions for the use of barmenit will show how these things work :—

To preserve **Meat**, rub its surface with barmenit, applied by means of a fine sieve. Take ½ lb. of barmenit to 100 lbs. of meat. Very large pieces are injected with 2-per-cent. solution before treatment as above.

Chopped and Sausage Meat is preserved by adding ½ lb. of barmenit to every 100 lbs.

Livers, Tongues, Kidneys, Hearts, &c., are treated like fresh meat ; to preserve them for a longer period put them into the above-mentioned solution.

Gut remains perfectly odourless and fresh when salted with a mixture of 80 parts of salt and 20 parts of barmenit.

Dressed Poultry is rubbed with barmenit inside, and some of it introduced into the throat.

Fish is salted with 80 parts of salt and 20 parts of barmenit well mixed together ; or, if not to be salted, rubbed outside with barmenit and injected inside with the solution.

Roast Meat and Fish of every description for use at hotels and restaurants are kept fresh by adding to every 4 oz. of salt 1 oz. of barmenit.

Butter is preserved by kneading it well with ½ per cent. of barmenit alone or with 1 per cent. of salt.

Milk is kept fresh for several days by adding ¼ per cent. of barmenit dissolved in a little hot water.

Fruit, Jams, Jellies, Cream, &c., require an addition of ½ per cent. of barmenit ; wine and beer $\frac{1}{10}$ per cent.

Australian Salt

Borax	℥xvij.
Common salt	℥j.

Mix.

Berlinit Pickle

Common salt	lb. iij.
Nitre	lb. ij.
Boric acid	lb. j.

Mix.

China Preserving-powder

Common salt	lb. iss.
Boric acid	lb. j.
Sulphite of sodium	lb. ij.

Mix.

American Ham-preserver

Alum	℥viij.
Nitre	℥iij.
Water	Cong. j.

Dissolve.

Nitre is used for making meat or hams red. Of the above pickles use 1½ lb. for 1 cwt. of meat. This is replaced in such articles as Preservaline by a red colouring matter. Preservaline is a mixture of equal parts of borax and common salt, sufficient of a rosaniline colour being added to give it a cherry tint. The disadvantage of nitre is that it makes the outside of the meat hard, while borax or boric acid produces a quicker cure.

Any of the foregoing compounds may be used for sausages. It is apparent that they owe their efficacy to the boric radicle.

The Bacon-preserver commonly used in England is a solution of boric acid 5 lbs., salt 55 lbs., saltpetre 5 lbs., and sugar (in winter only) 5 lbs. in 20 gals. of water. The rich colour of Wiltshire bacon is due to saffron, an infusion of which is brushed over it before marketing.

Formalin is a 40-per-cent. solution of formic aldehyde, and was formerly made under a patent, now expired. Formic aldehyde, or formaldehyde, is more strongly antiseptic or bactericidal in vapour than in solution. It is now largely employed by dairymen for preserving milk—a proceeding which is prohibited by law in the United States. One teaspoonful of formalin suffices to keep 10 gals. of milk perfectly sweet for three days in hot weather. Fresh meat may be preserved by putting a few drops of formalin in the dish and placing a good-fitting cover over it; or the surface of the meat may be rubbed with a cloth damped with formalin. The presence of formaldehyde in the meat is,

however, now believed to be undesirable, and its absolute prohibition for preserving food in the United Kingdom has been recommended by the Departmental Committee on Preservatives and Colouring-matters in Food. (*See* p. 342.)

Fresh Fruit is Preserved in jars by means of chloroform. A thoroughly clean glass jar is selected for the purpose. A few drops of chloroform are placed on the bottom, then some cotton-wool and a layer of the fruit, more wool and fruit, and so on right to the top, more chloroform finally being put on and the jar well closed. Soft fruits are not suitable for this method of preservation, and a great deal of the success depends upon the packing, for if there is undue pressure at any part the cellular tissue is bruised and the fruit spoilt. (*See* Supplementary Chapter.) The chloroform simply provides an aseptic atmosphere round the fruit, but there is great difficulty in getting rid of the taste of chloroform, and formalin suits better. In the United States housewives regularly preserve apples, &c., every autumn by putting the pared and cored fruit into special fruit jars and filling the jars with hot thin syrup.

Jams.—Evidence given before the Departmental Committee on Preservatives, &c., in Food showed that in making fruit jams without any preservative except sugar the jam must be boiled until it contains 60 per cent. of sugar. Salicylic acid is, however, very commonly used in the proportion of half-an-ounce to the hundredweight (1 in 3,500), and this enables the maker to produce a finished article containing 6 per cent. more water, while the jam is of better colour and consistency, and keeps longer, than jam free from chemical preservatives. Fuchsin and rhodamine are also used to colour the jams, as the brief and high ebullition to which the jam is subjected on a manufacturing scale is apt to caramelise part of the sugar as well as alter the fruit-colour. Home-made jams keep well without salicylic acid because they are boiled over an open fire for two hours or more, thus being thoroughly sterilised.

CLEANING-MATERIALS

The trade done by chemists and druggists in the kinds of household goods which we classify under this heading is by no means unimportant, and it is worthy of greater attention. The preparations do not, as a rule, call for that degree of artistic finish which one has to put on toilet articles, but it would be folly to exhibit slovenliness in any article, however humble its use may be. A little enterprise is also possible in this department. For example, the traditionary bugbear, spring cleaning, may be taken advantage of by issuing a circular in which hints are given about cleaning. The subjoined paragraphs may assist in drawing up such a circular :—

The Chemistry of Cleaning.—The following brief hints regarding the removal of stains from cotton, silk, and wool fabrics may be useful :—

Acid-stains, if recent, can be removed by applying solution of ammonia ; old stains are frequently removable in this way, but not if they have been done with nitric acid, which oxidises both material and dye.

Chrysarobin leaves nasty marks on linen. The fabric should be well washed to remove grease (or sponged with benzine or chloroform), and the spots dipped in Eau de Javelle and warm water alternately.

Coffee-stains.—Use Eau de Javelle in the same manner as above. Generally speaking, all stains produced by vegetable colouring matter can be removed with chlorinated-lime solution ; but care should be taken not to use it too strong, else it will rot the fabric.

Condy's Fluid Stains, considering that they are due to manganese oxide, should come out with a dilute hydrochloric acid ; but that fails as often as it succeeds. Urine never fails. Simply immerse the linen in urine for a quarter of an hour or more, and rinse in water.

Grease-stains.—If the articles can be washed the spots should be well rubbed with turpentine before the articles are sent to the wash, and a little ammonia solution should be put in the soaking water. Stains on tweed and other woollen cloth are often exceedingly difficult to remove, but benzine is about the best and cheapest liquid for treating the spots. Use it as directed on page 354. Stains on carpets should be well sprinkled with fullers' earth, then covered with a piece of brown paper, and a hot iron passed over the paper. Repeat, brush the spot well, and sponge lightly with ammonia solution. Turpentine is apt to make the stain spread.

Gunpowder-stains.—The bluish-black spots produced by gunpowder may be removed by painting with a solution of equal parts of iodide of ammonium and distilled water, then with dilute

hydrochloric acid. This method is equally applicable to the skin and to fabrics.

Ink-stains.—Gall writing-ink can easily be removed from linen by applying Salt of Sorrel (1 part potass. binoxal. and 2 parts potass. bitart.) to the damped spot, then dipping in water. The stains, especially of blue-black ink, are more difficult to remove from tweed, the cloth often shrinking in the process, so that the last state is worse than the first. After treating with salt of sorrel the spots should be dipped in weak Eau de Javelle and then in warm water. Marking-ink (silver) stains should, after washing, be painted with tincture of iodine, then, after standing all night, dip the spots in solution of potassium cyanide or sodium hyposulphite. Aniline marking-ink stains are more refractory. To remove them, first wash well in water containing a tablespoonful of ammonia solution to the gallon, rinse in warm water, and spread over a basin of the same. Prepare a solution of nitro-muriatic acid by heating ½ dr. each of nitric acid and hydrochloric acid in a test-tube for a few seconds until action begins. Dilute with 2 oz. of water. Brush this on the spots, dipping the linen in the basin after each application. Or, soak for ten minutes in ammoniated potassium permanganate solution, wash with water, then soak for two minutes in sulphurous acid 1 and water 6, again wash with water. Repeat if necessary.

Iodine-stains.—Sponge with ammonia solution or solution of sodium hyposulphite; steep in water, and rinse out.

Iron-rust.—Treat with salt of sorrel as for ink-stains. If refractory, place the moistened fabric on a bright polished warm iron, then rub on the salt of sorrel. The hydrogen disengaged by the acid helps to 'soften' the iron-rust by reducing it.

Milk-stains are due to the fat of the milk, and are treated as for grease.

Oil and Paraffin Stains.—Treat as for grease with benzine.

Prussian-blue Stains.—Wash out with weak solution of potash or soda and warm water.

Paint-stains.—Rub lightly with spirit of turpentine.

Pyrogallic-acid Stains.—Treat with ferrous-sulphate solution (1 in 16) until the colour changes, wash in water; next treat with potassium binoxalate and wash.

Resorcin-stains.—Use citric-acid solution (1 in 30).

Tar-stains.—Rub with a little butter, and after a few minutes sponge off with spirit of turpentine; or use alcoholic solution of soap.

Varnish-stains.—Treat as for paint-stains.

Wax-stains always yield to spirit of turpentine.

The removal of grease-spots from clothing can seldom be perfectly accomplished—indeed, if the stains are of long standing this is practically impossible; but it is easy to give the surface a clean appearance, and this is all that customers wish as a rule. The best solvents for oils are ethereal liquids, such as benzine, chloroform, carbon tetrachloride, and some

of the petroleum spirits. The French have made the petroleum spirits popular, and they are much used on the Continent. As an improvement upon ordinary benzine the following Perfumed Benzine is worth attention :—

Benzine	Oj.
Oil of lavender	℥j.
Bichromate of potassium . . .	℥j.
Sulphuric acid	℥j.
Water	Oj.

Dissolve the bichromate in the water, add the acid, and when the solution is cold shake up the benzine with it. Shake every hour during the day, allow to stand all night, decant the benzine, wash with a pint of water, and again decant. Add the oil, and put up in 2-oz. bottles.

PERFUMED BENZINE.

For Cleaning Silk, Cloth, Woollen, and Cotton Goods, Tulle, Lace, Gloves, &c. (Unlike many other cleansing solutions, this cannot possibly cause any injury to even the most delicate fabrics.)

DIRECTIONS FOR USE.

The material to be cleaned should be laid on several folds of clean blotting-paper or linen, the stain should be covered with a few drops of the benzine, and when the stained portion of the fabric is perfectly soaked with it some dry powder, such as fullers' earth or magnesia, is sprinkled over it and pressed firmly. After a few minutes shake off the powder and wipe the spot either with a linen rag or with bread, and lastly brush. If the stain be not entirely removed by this treatment, the operation should be repeated.

Tulle or Lace may be dipped in the benzine twice, and dried by spreading on a clean napkin on a table.

Coats, Jackets, &c., may be cleaned by wiping them a few times with a sponge wetted with the benzine.

Gloves should be put on the hand, buttoned, and the stains rubbed with a sponge wetted with the benzine. The gloves are then taken off and dipped once or twice in a saucer filled with the benzine, and dried with a clean napkin. Then hang them by a thread through the button-holes to dry in the air.

Highly inflammable. Keep the benzine away from the fire and gas.

'**Non-inflammable Benzine**' is carbon tetrachloride or a mixture of five or more volumes of it with one volume of petroleum ether or benzine. The mixture has all the appearance of benzine and its solvent properties, without its odour. The tetrachloride is non-inflammable and non-explosive. Ethylene dichloride is even less dangerous, and an excellent solvent.

Another article of similar application is Lightning Cleanser, which is made as follows :—

Castile soap	℥iv.
Boiling water	Oij.

Dissolve and add when cold

Strong solution of ammonia . .	℥viij.
Ether	℥ij.
Rectified spirit	℥iv.
Oil of citronella	ʒss.
Water to	Cong. j.

Mix. [Dissolve the oil and ether in the spirit.]

The following label shows the applications of this preparation :—

LIGHTNING RENOVATOR.

An Invaluable Household Requisite.

Removes Stains from all kinds of Woollen Goods. Brightens Black Clothes. Renovates Carpets, &c.

DIRECTIONS.

To Remove Grease-spots from Clothes.—Spread the part with the stains upon a table, putting a folded towel below the spots ; then rub in the renovator in a circular direction by means of a sponge.

To Brighten Black Clothes.—Sponge the whole of the garment equally with the renovator, first having removed any stains as above directed. Then hang out in the open air to dry, and iron if necessary.

To Renovate Carpets.—After thoroughly switching the carpet, or relaying after beating, take a stiff brush, such as a fibre scrubbing-brush, and apply the renovator over the whole surface, rubbing the stained parts hard. Finish off with a damp washing-cloth.

To Clean Flannels.—A teacupful of the renovator to be mixed with 10 gals. of water. In this mixture steep the flannels all night, and it will be found that they wash with ease next morning.

For Cleaning Paint.—Add a teacupful to a pailful of lukewarm water.

To Clean Windows.—Mix 1 part of the renovator with 5 parts of plain water.

The same directions apply for the preparations described on p. 356.

The following are improvements upon the foregoing:—

I

Oleate of ammonia	℥ij.
Solution of ammonia	℥ij.
Ether	℥j.
Benzine	℥v.
Chloroform	℥j.

Mix the solution and oleate; shake well and add the ether; shake, and add 5 oz. of benzine; agitate thoroughly. Then add 1 oz. of chloroform and shake well. Allow to stand a few minutes and shake at intervals, when a mixture having the consistency of cream and showing but little tendency to separate will result.

II

Liq. ammon. fort.	℥j.
Sapon. mollis	℥vj.
Sodii carb.	℥ij.
Sodii biborat.	℥ij.
Æther. methylat.	℥j.
Spirit.	℥j.
Aq. ad	Oij.

M.

Benzine Jelly

Tincture of quillaia (1 in 5 S.V.T.)	℥iss.
Benzine to	℥viij.

Shake for thirty minutes almost continuously, then set aside to solidify, which happens in about twelve hours.

Washing-liquor.—Under this name have become popular various preparations in which turpentine and ammonia are the more important ingredients. When a small quantity of the liquor is added to a copperful of clothes the turpentine is vapourised during the boiling, and, together with the ammonia, has the effect of 'loosening the dirt,' to use a vulgar phrase. Ammonia alone is almost as efficacious, and is displacing the terebinthinate preparations.

I

Household soap	½ lb.
Oil of turpentine	8 oz.
Strong solution of ammonia	20 oz.
Water	1 gal.

Shred the soap, and dissolve it in ½ gal. of the water by heating. With a pint of this when cold emulsify the turpentine, add the rest, shake well, then the ammonia and the remainder of the water.

II

Household soap	4 oz.
Borax	½ oz.
Oil of turpentine	10 oz.
Strong solution of ammonia	10 oz.
Water to	80 oz.

Prepare in the same way as No. 1.

The turpentine may be omitted.

There are many more preparations of the same kind, but they are simply modifications of these two recipes.

Household Ammonia

I

Common yellow soap	gr. viij.
Lavender-water	ℿxx.
Strong solution of ammonia	ʒvj.
Distilled water to	ʒxx.

II

Potass. carbonat.	ʒj.
Saponis mollis	gr. xv.
Liq. ammon. fort.	ʒv.
Aq. destillat.	ʒxv.

Oleate of Ammonia

Oleic acid	ʒj.
Spirit	ʒj.
Solution of ammonia	ʒvij.
Distilled water to	ʒxvj.

Pour the acid into a bottle; mix the spirit and ammonia, and pour into the bottle. Cork tightly, and allow to stand a week or more until saponification is complete.

This is suitable for adding to solution of ammonia (1 to 8) to make a household article.

'Household Ammonia' must be made with distilled or rain water. (*See* Supplementary Chapter.) It is generally labelled thus:—

Household Ammonia acts like a charm on hard water, softening it, and rendering it pleasant to the touch, and almost doing away with the need for soap. Curds, which mean a loss of soap, are entirely prevented, and washing becomes a luxury.

For laundry purposes it is invaluable; clothes left to soak overnight in water, with a little of this Ammonia added (a teaspoonful to each gallon), can be cleansed more readily and with much less labour and soap than if washed in the ordinary way.

Woollens and flannels treated by this method need less rubbing, and are not so liable to shrink.

For removing grease and dirt from clothing, and all textile fabrics, Ammonia will be found much better and cheaper than soap. Carpets, and similar goods, if sponged with it, are made to look like new.

For cleaning silver or plated goods, no matter how tarnished, it is excellent, and when once tried will always be used for this purpose.

OTHER LAUNDRY PREPARATIONS

Soap Powders.—The best soap to use for making these is one made from equal parts of tallow and cocoanut oil. The soda is 90-per-cent. alkali or the best crystal carbonate. The formulas on p. 358 are intended for extemporaneous mixing, but it is important to note that the best soap powders in the market are not so made, but in the following manner, viz.:—The soap (in thin slices) is put into a steam-jacketed pan containing at least its own weight of water. When nearly all melted put in a small quantity of the soda, which helps to make the last of the soap melt more readily. Then introduce the remainder of the soda, and keep the whole well stirred

until completely dissolved. The mixture is next transferred to a shallow table, about six inches deep, made of galvanised iron nailed to a wood frame and set in a place where there is a draught. While the mixture is run on to the table keep crutching it to prevent separation, and continue crutching from time to time until the mixture has become quite thick. It may then be left a day or two, when it will be hard and ready to be broken up. By continuing the crutching for a considerable time, the 'extract' gradually falls into a powder. But the better plan is to allow the mixture to become solid, and at the end of the two days to break up the mass and grind to powder in a mill or disintegrator. Any other ingredients of the powder, such as borax and sodium silicate, must be introduced during the crutching stage. The whitest soap powder is obtained by using crystal carbonate of sodium, and a cocoanut-oil soap is essential for getting the peculiar odour which soap powder has.

Borax Soap Powder

Soap	5 lbs.
Soda	3 lbs.
Silicate of sodium	2 lbs.
Borax	1 lb.

Mix.

London Soap Powder

Soap	6 lbs.
Soda	2 lbs.
Pearlash	1 lb.
Sulphate of sodium	1 lb.

Mix.

Pearl Soap Powder

Soap	4 lbs.
Soda	2 lbs.
Silicate of sodium	1 lb.

Mix, dry, and powder.

Chemical Soap Powder

Soap	1 lb.
Soda	1 lb.
Borax	1 lb.
Eucalyptus oil	1 dr.

Mix.

Bleaching-liquids.—Good business can be done in these by judicious pushing. On the Continent the sale for them is large, and is increasing here. Liq. calcis chlorinatæ, B.P., is as good as anything for the purpose, but the following are the popular liquids :—

Eau de Javelle

Chlorinated lime	℥iij.
Pearlash	℥iij.
Water	Oiv.

Mix the lime with Oiiiss. of water, and dissolve the pearlash in the remainder; mix, and after a few days filter, adding ʒij. of hydrochloric acid to the filtrate.

Eau de Labarraque

Chlorinated lime	℥v.
Washing-soda	℥x.
Water	Ov.

Mix each solid with half the water, mix the solutions, allow to stand a day, and filter.

Wilson's Bleaching-liquid is said to be a solution of chlorinated lime to which alum is added in sufficient quantity to precipitate the lime. Sulphate of magnesium is used in the same way in other cases.

Laundry Blue.—A good blue may be made from a mixture of Chinese blue and oxalic acid. Citric and tartaric acids are as good solvents as oxalic acid, six of either being equal to eight of oxalic acid. Chinese blue is simply a superior Prussian blue, which forms a perfect solution with about half its weight of acid and a sufficiency of water. The common powder blue consists of 2 parts of Chinese blue and 1 part of oxalic acid. Put this up in ½-oz. packets (to retail at 2*d.*) and label :—

LAUNDRY BLUE POWDER—POISON.

Place the contents of this packet in a basin, and pour a little boiling water upon it, stirring all the time, so as to form a cream. Then add sufficient cold water to make a pint of liquid, and bottle.

The only objection to this blue is that it cannot be used universally, because with some waters and washings it gives flecks, which are highly objectionable. It is in such cases that Thumb Blue gives so much satisfaction. This blue is a mixture of pipeclay and a special make of ultramarine.

Thumb or Table Blue

Superfine ultramarine	℥iv.
Ordinary ultramarine	℥ij.
Sodium carbonate	℥iv.
Glucose	℥ix.

Mix and make into a stiff paste by the aid of water, roll out into a thick sheet, and cut into cubes, which dry at a gentle heat (70° F.). This may have added to it a little soluble blue (not more than ½ oz.).

Ultramarine is the fastest of the blues used for laundry purposes, because it is not affected by the hot iron. Indigo carmine gives equally satisfactory results, and may also be used in solution. The same remark applies to methyl blue, which has within the past few years also come into use for the same purpose. Most of the aniline blues have strong blueing properties, and, as they are used in solution, they do

not speck the clothes. Some are fast to acids and alkalies, others are fast to one but not to another. Some do not stand ironing, others do. The soluble, or cotton blues, are those most favoured. These are made in a great variety of tints, varying from a reddish blue, 3R, to a pure blue, 6B. Occasionally the methyl violets are used, especially the blue tints. Blackley blue is very largely used for laundry purposes, being faster than the soluble blues. A 1-per-cent. solution of this dye is used.

Starch Glaze or Gloss.—Powder 'gloss' is preferred. One kind consists of borax, alone or mixed with 2 oz. of potato starch to each pound of borax. A teaspoonful of this goes with each heaped tablespoonful of starch. Another and very popular preparation is represented in the following :—

French chalk	ʒiij. or ʒj., or none
Powdered white soap	ʒj. or ʒij., or a sufficiency

Mix.

This is put up in ʒj. packets to retail at 1*d.* with the following label :—

> DIRECTIONS.—Take a piece of new dry flannel and dip it into the glaze-powder ; rub it well over the right side of the starched article, then proceed to iron in the usual way, when a beautiful gloss will be obtained. Put in a little borax in making the starch to give stiffness as usual.

Byron Silver Gloss (*C. & D.*, 1906, I., 981) was a mixture of powdered soap 1 part and French chalk 3 parts.

For Liquid Starch Gloss the following are the best forms :—

I

Spermaceti . . .	ʒj.
Gum arabic . . .	ʒj.
Borax	ʒj.
Glycerine . . .	ʒiiss.
Water	ʒxivss.

Boil half the water and add the borax and spermaceti to it. Separately dissolve the gum in the remainder of the water and the glycerine. Strain and mix thoroughly with the warm mixture.

II

Glycerine . . .	ʒij.
Spirit of turpentine . .	ʒij.
Borax	ʒij.
Cold-water starch . .	lb. j.
Water	Ovj.

Rub down the starch with water to a smooth paste, then add the rest of the water in which the borax has been dissolved. Add the glycerine and turpentine last.

The first of these is a good gloss for cold-water starch; a wineglassful of it is used with 4 oz. of dry starch, or, say, one tablespoonful to a heaped tablespoonful of starch. The second recipe is a domestic one, and the mixture is excellent for cold-water starching.

White wax, hard paraffin, stearin, and spermaceti are much used for starch glazing. About a drachm of any one of them is used with a tablespoonful of dry starch, the boiling water serving to emulsify this waxy substance. They are not available in this solid form for cold-water starching. In that case the following are useful :—

A

Spermaceti	ʒj.
Borax	ʒj.
Starch	ʒiv.

Reduce the spermaceti to fine powder and mix with the borax and starch.

B

Powdered borax	ʒXLII.
Potato starch	ʒxvj.
Dried common salt	ʒxiv.
Powdered dextrin (white)	ʒiij.

Mix.

A teaspoonful of either goes with each tablespoonful of starch-powder. A polish is sometimes imparted to shirt-fronts by rubbing the fronts with wax or paraffin after the iron has been passed over the linen once, but the highest polishes are only obtainable by the use of a polishing-iron.

Cold-water Starches

Liquid

Sago flour	10 lbs.
Common salt	4 lbs.
White dextrin	2 lbs.
Glycerine	2 lbs.
Water	13 pints

Mix.

Powder

Sago flour	22 lbs.
Rice starch	9 lbs.
Dried common salt	6 lbs.
Powdered borax	6 lbs.
White dextrin	6 lbs.

Mix.

Iron-rust Spot Remover

Cream of tartar	ʒviij.
Powdered binoxalate of potassium	ʒviij.
Oil of lemon	ɱx.

Mix.

Moisten the spot and rub with the powder.

Salt of Lemon.—The last-mentioned formula is substantially what is sold by many in the trade as salt of lemon, but

some give pure sal acetos. How it came to be called 'salt of lemon' we have been unable to trace, but the change was effected some time between the seventeenth and the beginning of the nineteenth century. John Baptista Porta ('Natural Magick,' London, 1658) gives the following directions for making 'Salt of Lemmons':—

> Distil the lemons with their peels and juice; reserve the water, and dry the rest in the sun if the season permit it or in an oven. Put them in a pot close luted, and calcine it in *igne reverberationis*. Then dissolve the powder in the water, and boil them in a perfect lye, cleanse it with a feather, that the dregs may settle to the bottom; purify it and let the liquor evaporate, so that the salt will remain in the bottom; which is most excellent to break the stone in the bladder.

This salt would consist chiefly of phosphate of potassium, a little carbonate, and probably citrate, and it was doubtless 'most excellent for stone in the bladder,' but how the same name came to be applied to binoxalate-of-potassium preparations is a mystery. Ure stated in 1827 that 'essential salt of lemons' is superoxalate of potassium. Gray (1828) gives it 'Crem. tart. 4 oz., sal. acetosellæ 8 oz.' As we have stated, however, many in the drug-trade give a mixture of sal acetos and cream of tartar, which, strange to say, is more effective than the sal acetos alone.[1] The remark on p. 353 in respect to the use of the

[1] Gray's formula seems to give the origin of the use of cream of tartar in the salt. Many of the formulas printed in early editions of his 'Supplement' were 'wholesale.' At that time it was the exception to get a pure drug, adulteration being systematically practised, especially with such things as salt of sorrel. Brande, in his 'Manual of Chemistry' (1821), refers to 'salt of lemons (superoxalate of potash)' in the index, nothing being said about lemons on the page given; but it is stated that 'a salt . . . consisting of 4 proportionals of oxalic acid [and] 1 proportional potassa . . . is the *quadroxalate of potassa*, and is the salt which exists in wood sorrel.' In Henry's 'Elements' (1823) the binoxalate, and not quadroxalate as specified by Brande, is described:—'It may either be formed artificially or obtained from the juice of the *Oxalis Acetosella*, or of the *Rumex acetosa*. When procured in the latter mode it is sold under the name of *salt of sorrel*, or *essential salt of lemons*.' There were many 'essential salts' in the eighteenth-century Pharmacopœias. The Phar. Edin. directions for *sal essentiale acetosa* were substantially: 'Allow sorrel-juice to settle, decant, evaporate to one-third, strain into a glass vessel, cover the liquor with a little olive oil, set aside to crystallise, collect the crystals, wash slightly, and dry.' The oil was used to prevent fermenta-

salt should be noted. We append here the formula (No. I.) generally used, also one (No. II.) for a non-poisonous salt :—

I		II	
Potass. bitart.	℥xvj.	Potass. bitart.	℥xij.
Potass. binoxalat.	℥x.	Pulv. acid. citric.	℥xij.
Ol. limonis	gtt. x.	Ol. bergamot.	gtt. x.

The 'salt' without perfume is preferred by many.

MISCELLANEA

Breeches-ball

Pipeclay	lb. ij.
Bath-brick	lb. j.
Pumice-stone	℥iv.
Ox-gall	℥vj.

Reduce the solids to fine powder, mix with the clay, ox-gall, and a little water to a stiff paste. Colour with rose-pink, ochre, or umber.

Breeches-paste

(*Marquis of Lothian's Groom*)

Pipeclay	lb. j.
Spanish white	℥viij.
Flake white	℥vj.
Precipitated chalk	℥iv.
Spermaceti	℥j.
Lard	℥viij.

Mix thoroughly, first melting the spermaceti and lard before adding to the mixed powders.

Clothes-ball

Pipeclay	lb. ij.
Fullers' earth	℥iv.
Whiting	℥iv.
White pepper	℥ij.
Ox-gall	℥iv.

Make into a stiff paste with the aid of a little water.

Light magnesium carbonate in lump is also used.

Egg Scouring-ball

Yellow soap	℥viij.
Methylated spirit	Oj.
Yolks of eight eggs.	
Spirit of turpentine	℥ij.

Dissolve the soap in the spirit by the aid of a gentle heat, add the yolks and the turpentine, mix thoroughly, and form into a stiff paste with light carbonate of magnesium.

Gall-soap

(*For Removing Stains*)

Curd soap	℥xxx.
Water	Oij.
Ox-gall	℥x.
Carbonate of sodium	℥v.

Shred the soap and dissolve it in the water by heat, add the ox-gall and the soda (in powder), and evaporate until, on cooling a little of the soap on a marble slab, it solidifies. Pour into a tray to the depth of 1¼ inch, and when cold cut into suitable-size cakes.

Glass-cleaner

Calcined magnesia made into a cream with benzine.

---

tion of the juice by excluding the air. This salt was then an old remedy for stone and kindred troubles, and a salt of lemons was probably made from lemon-juice in this improved way. As far as we have been able to trace, Gray was the first to reveal that the trade article was mixed with cream of tartar. See also *C. & D.*, 1913, I., 969, and 1913, II., 15.

Carpet-soap

Fullers' earth . . . ʒiv.
Spirit of turpentine . . ʒj.
Pearlash . . . . ʒviij.

Rub smooth and make into a stiff paste with

Soft soap . . a sufficiency

Glove-cleaners

(*Ganteine*)

Curd soap . . . ʒj.
Water . . . . ʒiv.
Oil of lemon . . . ʒss.
French chalk . . a sufficiency

Shred the soap and dissolve in the water by heat, add the oil of lemon, and make into a stiff paste with the French chalk.

The oil of lemon and chalk may be omitted, and replaced by pulv. iridis subtilis.

(*Saponine*)

White soap . . . ʒxxv.
Warm water . . . ʒxv.
Eau de Labarraque . . ʒxvj.
Solution of ammonia . ʒj.

Shred the soap and melt it in the water by heat, stirring well all the time. When lukewarm add the other liquids and mix thoroughly well.

Directions for either of these: Put the glove upon the hand and apply the paste with a piece of flannel, rubbing the kid from wrist to tip of finger.

Marble-cleaner

Dried sodium carbonate . ʒij.
Powdered pumice . . ʒj.
Chalk . . . . ʒj.

Mix and sift. [May be made into paste with water (2) and glycerine (1).]

Directions. — Rub the powder, made into a cream with water, well over the soiled parts, and wash off with soap and water.

Marble-polish

Fine rotten stone, emery powder, and putty powder are used; marble-polishers use the last mentioned, making it into a thin paste with water and rubbing with thick felt or a pad of moleskin.

For Cleaning Glassware

Powdered pumice-stone . ʒij.
Oleate of ammonia . . ʒiij.
Solution of ammonia to make . . . . ʒxvj.

Shake before using.

Soap for Cleaning Elastic Stockings

Pulv. saponis . . . lb. ij.
Aquæ destillatæ . . Oiij.

Dissolve the soap in the water, and when solution is complete allow to stand for two days, and add

Liq. ammoniæ . . ʒvij.
Spt. odorati[1] . . . ʒxxxiij.

Mix and put up in covered vessels.

Directions.—Dissolve ½ oz. of the soap in a quart of cold water, in which let the stockings steep for twenty-four hours; then remove and rinse well in cold water.

Window-cleaning Powder

Dried sodium carbonate . ʒss.

Directions.—Empty the contents of the box into 2 pints of clean hot water and shake for a few seconds; it is then ready for use.

Windows, to Obscure

I. Dissolve glue ½ oz. in water 20 oz. and make whiting into a paste with the glue-water. Daub the mixture on the glass with a cotton pad.

II. Paint the glass with a lukewarm saturated solution of alum or Epsom salts.

[1] May be mineralised methylated spirit containing ol. ros. geranii ʒij.

Chimney-cleaning Powders

The articles sold under this name in packets of about 4 oz. for 2*d.* are usually a mixture of common salt 2 parts and sulphur 1 part, sometimes coloured with Armenian bole or aniline blue. The mixture is thrown on a bright fire, and the sulphurous and hydrochloric vapours help to make chimneys a trifle cleaner.

Scarlet Coats, to Clean

Stanni chloridi xtl. .	ʒj.
Acidi hydrochlorici .	ʒj.
Acidi tartarici .	ʒss.
Aquæ . . .	ʒxvj.

Solve.

Apply to the stains with a sponge, and dry out of doors.

For the Army Regulation methods *see* Supplementary Chapter.

FURNITURE-POLISHES

Furniture-polishes may be roughly divided into three classes—creams, oils, and pastes. In the whole of them linseed oil, or wax, and oil of turpentine are essential ingredients. It is not difficult to understand why this should be. The primary polish on furniture is a pellicle of resins, which on exposure receives a thin coating of dust, &c., and, it may be, the resin is partly saponified on the surface. Oil of turpentine is one of the best possible things to remove these, while it so thins the linseed oil that rubbing is simplified, and the heat generated favours oxidation of the linseed oil, consequently, the formation of a new polished pellicle upon the original. There is no doubt that furniture-oils give the best polish, but unless they get much hard rubbing they leave a surface which shows finger-marks. For dull-polished furniture the pastes only should be used, as they sink little into the wood and give an excellent surface.

The number and variety of recipes for furniture-polish are as perplexing as the why and wherefore of them. We know practically nothing about the principles upon which the recipes are based. There are strange ingredients in some of the preparations; what good they are we cannot tell, yet if one of them be omitted an experienced polisher can detect the difference. The late Dr. John Attfield once said that it is astonishing how much science can be made to flow from a bottle of furniture-polish. The remark was pertinent to a paper which had at the moment been read by Mr. R. H.

Parker on the formation of terpene hydrate in a furniture-oil. The hydrate forms crystals like tartaric acid and scratches the furniture. It is formed in polishes containing alcohol, turpentine, and an acid. Mr. Parker thought the one in which he discovered crystals was composed of linseed oil, oil of turpentine, methylated spirit, and butter of antimony; but he made up some, and after waiting four years could not get the crystals again. We are so far able to corroborate Mr. Parker's observation as to say that magnificent crystals of terpene hydrate separated from the following polish *on one occasion* after six months :—

	Parts
Raw linseed oil	130
Oil of turpentine	30
Archil	2
Vinegar	100
Butter of antimony	30
Methylated spirit	100

Furniture-creams.—There is often want of success in compounding these saponaceous preparations, and this, we have found, is generally due to the use of 'beeswax,' consisting more or less of paraffin. Wax is only sparingly saponifiable, but the little of it which is saponified assists in the emulsification of the remainder. Furniture-creams are emulsions. The best white wax to use is the Madras kind. Ceresine and paraffin are useless.

I

Household soap	ʒiiss.
Potassium carbonate	ʒij.
Water	Oij.

Dissolve by heating and add

White wax	ʒxx.

Stir constantly until well mixed, then remove from the fire and add slowly, constantly stirring

Oil of turpentine	Oiv.

Mix well.

II

Castile soap	ʒj. (2)
Yellow wax	ʒxvj. (1)
White wax	ʒj. (1)
Spirit of turpentine	Oij. (16)
Boiling water	Oij. (6)

Melt the waxes on a water-bath and add the turpentine, stirring until the mixture is quite liquid. Separately dissolve the soap in the boiling water, and pour the two mixtures simultaneously into a hot earthenware jar. Stir for five minutes, and pour into wide-mouth bottles for sale.

These typify two methods of mixing; the essential difference is in the treatment of the wax. We prefer the second method, because when wax is dissolved in turpentine and added to an aqueous alkaline or saponaceous solution it emulsifies more readily. The objection to the second preparation is that it is thick: the figures in parentheses are for alternative quantities in ounces, a polish like Hollis's being the result.

III

Yellow wax	ʒxvj.
Spirit of turpentine	ʒxxx.

Shred the wax and steep in the spirit all night. Next morning place the jar containing it in a basin of hot water, and meanwhile prepare the following solution:—

Pearlash	ʒij.
Soft soap	ʒiv.
Hot water	Ovj.

Mix the two solutions by pouring the second gradually into the first, stirring briskly the while.

IV

Yellow household soap	ʒvj.
Potassium carbonate	ʒj.
Water	Oiij.

Dissolve by heat.

Resin	ʒss.
Yellow wax	ʒviij.
White wax	ʒiv.
Spirit of turpentine	ʒxxx.

Powder the resin and shred the waxes. Dissolve in the turpentine as in No. III., and mix the two solutions in the same manner.

The fourth recipe is said to give a preparation like Adams's. Of the two following formulas the first is intended for cheap retail. The second is a highly spoken of American preparation.

V

Japan wax	ʒiv.
Oil of turpentine	ʒxij.

Shave the wax and dissolve it in the turpentine, then add

Linseed oil	Oiv.
Spirit	ʒxij.
Solution of potash	ʒvj.
Water to	Cong. j.

Make into a cream by brisk agitation, diluting the potash with the water before adding it.

VI

Oleate of ammonium	ʒij.
Solution of ammonia	ʒij.
Shellac varnish (1 in 8)	ʒvj.
Linseed oil	ʒvj.

Mix the solution and oleate, add the varnish, and shake well; then add the oil and shake thoroughly.

Furniture Oils and Polishes.—These are distinguished from the foregoing in not being creamy, and in containing comparatively little non-oleaceous ingredients.

FURNITURE POLISH.

Is claimed to be not only the most successful, but the most economical, Furniture Polish on the market, as the smaller the quantity used, the more lasting and brilliant is the polish produced.

Directions for Use.

Well shake the bottle, and pour a small quantity into a saucer, then with a piece of soft flannel or rag apply the polish with gentle friction. A light rubbing with a soft duster should now be given to ensure the removal of superfluous polish.

Neither of these operations is at all arduous, entailing far less labour than the ordinary furniture 'creams,' with which such brilliant results are not possible.

I

Linseed oil	Oiv.
Tincture of benzoin	ʒiv.
Archil	ʒij.
Vinegar	ʒxvj.
Solution of antimony chloride	ʒvj.
Spirit	ʒx.

Mix.

II

Linseed oil	Oij.
Vinegar	ʒvj.
Spirit of turpentine	ʒiij.
Hydrochloric acid	ʒj.
Spirit	ʒij.

Mix in the above order.

III

Linseed oil	ʒxx.
Spirit of turpentine	ʒxij.
Solution of antimony chloride	ʒj.
Vinegar	ʒviij.
Methylated spirit	ʒiij.
Camphor	ʒij.
Sal ammoniac	ʒiij.

Dissolve the camphor in the spirit and the sal ammoniac in the vinegar. Mix the ingredients in the order of the recipe.

IV

Dragon's blood	ʒss.
Oil of turpentine	ʒvj.
Linseed oil	Oj.
Hydrochloric acid	ʒiss.

Powder the dragon's blood and shake well with the turpentine. After a day strain into the linseed oil and add the acid.

V

Linseed oil	ʒviij.
Spirit of turpentine	ʒviij.
Resin	ʒj.
Spirit	ʒj.
Nitric acid	ʒss.

Dissolve the resin in the turpentine, add to the oil, then add the spirit and acid.

VI

Linseed oil	ʒxij.
Solution of antimony chloride	ʒj.
Old ale	ʒx.
White of two eggs.	

Mix the oil and the antimony, and separately the white of eggs and ale. Mix the two by brisk shaking.

The first four recipes are excellent. In the fifth product terpene hydrate forms, due to the nitric acid, which should never go into polishes containing turpentine and alcohol. The sixth is a favourite with publicans. The old ale is, of course, the equivalent of vinegar. 'Spirit' means methylated spirit, preferably 'industrial,' if permission to use it is obtained.

Furniture-pastes

I

Yellow wax	℥xiv.
Spirit of turpentine	℥xxxij.

Shred the wax and steep it in the turpentine overnight, then complete solution by putting the jar into a basin of hot water and stirring until the mixture is clear. Remove from the basin and stir occasionally until the mixture is creamy.

II

Curd soap	℥j.
Water	℥x.

Dissolve by heat and add to the following, previously liquefied :—

Yellow wax	℥iij.
White wax	℥j.
Spirit of turpentine	℥iv.

Stir until of a creamy consistency.

III

Ceræ flav. (in shreds)	℥iij.
Ol. terebinth.	℥xx.
Ol. lini	℥ij.
Rad. anchusæ	℥iss.

Digest the alkanet in the mixed oils, strain, melt the wax on a water-bath, and add the oils to it, constantly stirring.

IV

Ceresine	lb. iij.
Spirit of turpentine	Oiv.
Resin	℥vj.
Vermilion	℥j.

V

Alkanet-root	℥iij.
Oil of turpentine	℥xL.

Macerate for a week, strain, and add

Yellow wax	℥iv.
Hard paraffin	℥x.

Melting by heat.

It may be noted that ceresine is better than hard paraffin for furniture-paste ; but both are improved by the addition of resin, as without it the turpentine is apt to ooze out from the paraffin or ceresine. Alkanet is a better colouring than vermilion or red-lead.

Linoleum-polishes are virtually furniture-pastes. Liquid preparations do not preserve the surface of linoleum so well as wax and turpentine alone, and a weekly application of the latter to the painted surface prevents the paint wearing off for several years. On the next page several special formulas for linoleum-polish are given.

I

White ceresine	℥j.
Hard paraffin	℥ij.
Oil of turpentine	℥iv.
Benzine	℥j.

II

Palm oil	℥iiss.
Carnauba wax	℥v.
Yellow ceresine	℥iiss.
Oil of turpentine	℥xl.

III

Yellow ceresine	℥iv.
Hard paraffin	℥iiss.
Boiled linseed oil	℥iss.
Oil of turpentine	℥xvj.
Oil-soluble cerotin orange	℥ss.

IV

Palm oil	℥ij.
Yellow wax	℥iv.
Oil of turpentine	℥xij.

Beeswax and turpentine alone, in the proportion of 5 oz. of the former to a pint of the latter, is excellent. In all these cases melt the solids by heat, strain if necessary, and add the oil of turpentine carefully.

METAL-POLISHING PREPARATIONS

Within the past twenty years a complete change has been effected in the preparations used for cleaning brass and other metals common in the household. In our early days oxalic acid and rottenstone were the universal metal-polishing agents. Now, it is with an apology that we include formulas for these old things in this book, as the new ones are distinctly superior. First of them, in point of time and popularity, came the soaps of Brooke's type, which are essentially a mixture of a fossil earth or fine silica and soap, the latter in small proportion. The chief secret about these soaps is the source of the pulverulent materials which make up their bulk. Next came the Putz-pomade (literally, polishing-ointment), in which ferric oxide and petroleum jelly are the principal ingredients, and this paved the way to quite a unique group of preparations which revealed to housewives the startling efficiency of paraffin as a metal-cleaning material. This, it is true, was known before, but the fact remains that the cleaning of metals is now a better understood art. It is well to note here that most metals used in the household become dull for two reasons: first, adhesion of greasy matter, which is always present in the atmosphere, especially that of towns; and, secondly, oxidation of the metal. In the latter case we

get on silver a distinct black coating of oxide of silver; to a less extent oxide of copper is formed on brass, and air and moisture together quickly rust bright steel goods. The old-fashioned way for restoring the bright surface was simply to rub off the dull part; but the new preparations aim at dissolving the grease and oxide, thus enabling the polishing basis to work more easily and quickly. Even in days gone by this was appreciated. Thus it was formerly claimed by the United States Arsenals that their method of cleaning brass was the best in the world; certainly it was efficacious, for it consisted in dipping the metal in a mixture of 2 parts of nitric acid and 1 part of sulphuric acid, which would completely remove the oxide, and with it much of the metal; then the articles were washed in cold water and rubbed with sawdust, whereby a brilliant polish was imparted. But it was necessary sometimes to dip the articles in a strong soda lye to remove grease before putting them in the acid bath. So, after all, the 'best method of brass cleaning in the world' was stupidly commonplace and shockingly wasteful.

Between the old Polishing-pastes and the modern Metal-polishing Soap there is a wide contrast, as the following show :—

Ancient

Oxalic acid	ʒij.
Soft soap	ʒviij.
Sweet oil	ʒviij.
Spirit of turpentine	ʒj.
Rottenstone	lb. ivss.
Boiling water	ʒxvj.

Dissolve the acid in the water, add the rottenstone, and finally the other ingredients to form a perfectly smooth paste.

Modern

Silica in No. 80 powder	90 oz.
Kieselguhr	10 oz.
Oleic acid	13 oz.

Mix and add the following mixture :—

Sodium silicate (water-glass)	2 oz.
Caustic soda	2 oz.
Water	15 oz.

Mix thoroughly, and mould into suitable cakes. Dry for a week at 80° F.

Although unscientific the paste really does its work well. It contains free fatty acid, which is the starting-point in putz pomades. The soap formula furnishes an article like Brooke's. Other forms of paste are given on the next page.

I

Venice tripoli	lb. j.
Spanish whiting	lb. j.
Powdered pumice	ʒviij.
Kerosene	ʒiij.
Crude oleic acid	ʒiv.

Crude petroleum jelly (soft) a sufficiency to make a paste.

II

Rottenstone	ʒxl.
Soft soap	ʒxx.
Oil of amber	ʒij.
Water	a sufficiency

Mix.

Perfume with oil of mirbane.

Metal-paste or Putz-pomade.—The powder basis of white or grey pastes may be precipitated silica or elutriated kieselguhr, the silica being on the whole the better. The addition of 10 per cent. of ferric oxide serves to convert the white into red paste, but some fine red preparations are made with tripoli.

I

Japan wax	ʒij.
Crude oleic acid	ʒx.

Melt and add

Precipitated silica	ʒv.
Ferric oxide	ʒij.

Both finely levigated. Perfume with oil of mirbane ♏x.

The wax may be increased to make a hard product.

II

Ferric oxide	ʒviij.
Paraffin wax	ʒij.
Lubricating-oil	ʒvj.
Oleic acid	ʒj.
Oil of mirbane	ʒss.

Melt the paraffin wax with the lubricating-oil and mix with the ferric oxide, previously well levigated; add the acid and the oil of mirbane.

There is a growing tendency to make these preparations colourless, using for them natural white earths (not clays) which are found in various parts of the world. These earths are sometimes pure silica, and of a fossil nature, and when elutriated or sifted they are admirably adapted for the purpose. Such popular preparations as Brooke's soap and Pynka appear to have powders of that nature as their bases.

Belgian Putz Powder

Carbonate of lead	ʒxij.
Carbonate of magnesium	ʒij.
Ferric oxide	ʒij.
Precipitated chalk	ʒxxx.

Mix.

Metal Cream

Prepared chalk	ʒiv.
Powdered soap	ʒss.
Kieselguhr	ʒj.
Solution of ammonia	ʒvj.
Spirit of rosemary	ʒij.

Mix.

Liquid Metal-polish or Putz

Levigated ferric oxide .	ʒiv.
Oil of mirbane . .	♏xij.
Putz oil	ʒxvj.

Mix.

Kieselguhr ʒij. may be used in place of ferric oxide, and crystal white petroleum instead of putz oil.

Putz Oil

Crystal white petroleum .	ʒiv.
Crude oleic acid to .	Oj.

Mix.

Some imported polishing-liquids have been condemned under the Petroleum Acts as giving a flash-point below the statutory limit, 73° F. (these requiring a petroleum-licence for their sale). As to polishes made with petroleum spirit, it was pointed out by the late Captain J. H. Thomson and Sir Boverton Redwood, Bart. (*C. & D.*, 1904, I., 837) that the presence of solids in the liquid petroleum gives rise to convection-currents, which produce a reading about 15° F. below the true flash-point.

Stove-polishes.—The indispensable basis of these is graphite, or blacklead, but such additions as gas black (10 per cent.) or ivory black (20 per cent.) are made to them along with some granulating substance (*e.g.*, glycerine 1 per cent., or molasses 1 per cent., or acetic acid 2 per cent., with as much water). After thorough levigation and mixture of the ingredients, the granulated powder is compressed into cakes.

Silver or Plate Powders.—Comparatively few powders have inherent chemical properties such as would effect a fresh deposit of silver upon the metal. There is a tradition that one powder is nothing more than a mixture of precipitated chalk and solution of cyanide of silver; but a powder of that kind is neither desired nor required for household purposes. Such articles are silver-platers, not silver-cleaners. For all practical purposes precipitated chalk alone or 4 parts of the chalk and 1 of heavy carbonate of magnesium makes an efficient plate-powder. A little colouring, such as ferric oxide, Armenian bole, or crocus powder, may be added. Grey powder (hydrarg. c. cretâ) is also used, and 5 or 10 per cent. of it unquestionably gives a brilliant polish, but wears away the silver through amalgamation. Phosphate of lime in fine powder and precipitated silica also make excellent plate-powders.

I

Rouge	℥ss.
Heavy carbonate of magnesium	℥viij.
Light precipitated chalk	lb. j.

Triturate the rouge with 2 oz. of the chalk for five minutes, and gradually add the rest of the powders. Sift three times.

II

Rottenstone	℥j.
Heavy carbonate of magnesium	℥iv.
Phosphate of lime or precipitated silica	lb. j.

Prepare in a similar manner to No. I.

In putting these up it is advisable to mention in the directions that the powder should be made into a thin paste, with equal parts of household ammonia and water, as the alkali assists greatly in cleaning the plate. The following are combinations of powder and liquid :—

III

Precipitated chalk	℥ij.
Solution of ammonia	℥ij.
Methylated spirit	℥iij.
Water to	℥xx.

Mix. Tint with carmine if desired.

IV

Precipitated chalk	℥viij.
Spirit of turpentine	℥ij.
Spirit	℥j.
Spirit of camphor	℥ss.
Solution of ammonia	℥ij.

Mix.

The first of these 'liquids' we can vouch for as excellent. The second is a recipe which, under various names, has been 'going the rounds' for many years. 'Silverine' is one of

SILVERINE.

A NEW PREPARATION

For cleansing and restoring Gold, Silver, Gilt, Plated, or Parcel-gilt Jewellery, Electro or Nickel Plated Wares, Polished Brass, &c., &c.

WARRANTED FREE FROM MERCURY.

Instructions for Use.

Well shake up, and use on a piece of cotton-wool, sponge, or soft cloth ; then rub off perfectly dry with wool, soft leather, or cloth. If for fancy work, apply as above and lightly polish off with a soft cloth. For Gold, Gilt, and Brass articles, dilute to half strength by adding water.

To be kept tightly corked when not in use.

its names, and it is said to be 'a most excellent liquid for renovating all kinds of silver, plate,' &c. Why turpentine and camphor should be used for cleaning silver we do not know. We quote it as another example of the recipes which are thoughtlessly reproduced year after year. Some time ago we analysed a 'silverine,' which we found to consist substantially of the ingredients given in No. III. formula, with the addition of sufficient red oxide of iron to give a flesh tint. The label for it is as shown on the previous page.

Silver-polishing Paste

Pulv. cornu cervi	℥j.
Pulv. oss. sepiæ	℥j.
Cretæ præcip.	℥v.
Vaselin. liquid.	℥v. vel q.s.

Fiat pasta.

The solids should be in the finest possible powder, and a uniform paste should be made of the whole. Put the paste up in small tin boxes.

Silver-soap

Cocoanut-oil soap	℥v.
Water	℥vj.

Dissolve by the aid of heat and incorporate with

Prepared chalk	℥xvj.

Mould into cakes. If desired a few drops of oil of mirbane may be added to the mass. For a red soap the following mixture is used instead of chalk :—

Prepared chalk	℥viij.
White tripoli	℥iij.
Rouge	℥iij.
Red tripoli	℥ij.

Silvering-fluid

I

Fine silver	℥j.
Diluted nitric acid (1 in 4)	q.s.

Dissolve, evaporate, crystallise, and dissolve in 3 pints of water (or use silver nitrate ℥iss.). Carefully and completely precipitate with

Potassium iodide	℥ij.
Water	℥x.

Wash the precipitate thoroughly and dissolve in a hot strong solution of potassium cyanide, avoiding excess. Make up the solution to 1 gal.

Directions for Use.—Heat the solution to about 185° F. in a porcelain or enamelled-iron basin, and immerse in it the articles to be silvered, which should previously have been thoroughly freed from grease. A few minutes' immersion suffices to give the articles a bright lustre, and the longer they remain in, the duller does the coating become.

II

An article sold by hawkers is made by dissolving 1 oz. of mercury in 2 oz. of nitric acid, contained in an uncorked bottle, and when action ceases making up to 1 pint with water. The 'silvering' which this effects is, of course, evanescent, because mercurial. A similar article used for policemen's buttons is

Silvering-paste

I

Tin dust	℥j.
Mercury	℥iv.

Rub together until an amalgam is formed.

II

Silver nitrate	gr. xxxvj.
Potassium cyanide	℥j.
Water	℥J.

Dissolve the nitrate in half of the water and the cyanide in the rest, mix and add to

Precipitated chalk	℈v.
Cream of tartar	gr. v.

Make a paste.

Gilding-paste

Gilding-paste may be made in the same way, using gold chloride instead of silver nitrate.

Directions.

To use either of these, clean thoroughly the surface to be plated by washing with soda and water, dry, and apply the paste, allowing it to remain on overnight.

The following is another method of making No. II. paste :—

Nitrate of silver	℥ss.
Common salt	℥ss.
Cyanide of potassium	℥j.
Chalk	a sufficiency

Dissolve the silver nitrate in a pint of water and add the salt dissolved in as much water. Mix the solutions, and collect the precipitate on a piece of cotton cloth. Transfer the moist precipitate to a mortar containing the cyanide (in powder), and dissolve by adding more water if necessary; then make the solution into a spreadable paste with prepared chalk.

To silver any tarnished article spread some of the paste upon the spot and leave for a few hours; then brush it off. Repeat if necessary. The result is not so good as by electro-deposition.

Still another method, applicable to copper surfaces, and for giving a dull silvery appearance, is to prepare precipitated silver by placing sheets of copper in a nitrate of silver bath. Dry the copper with the silver upon it, remove the silver powder, and mix with its own weight of cream of tartar and dry salt. Rub this upon the metallic surface with a damp piece of chamois leather.

BOOT AND LEATHER DRESSINGS

Since this work was first published a remarkable revolution has taken place in boots and blackings for them. Soft leathers are now extensively used for boot-uppers, and these, like brown-leather boots, require an oleo-wax polish instead of the old-fashioned watery blacking and hard brushes. The change is well indicated in the following observations on 'Modern Shoe Polishes and Dressings,' by Dr. Jas. T. Donald, of Montreal (*C. & D.*, 1913, I., 772):—

Dressings.—This term includes all preparations used in cleaning or renovating boots and shoes where friction is not employed, whether the result be a gloss or not. By far the most important and widely used dressing is 'ladies' dressing,' so called because of its very general use on women's and children's foot-wear of kid and goat leathers. This is essentially a coloured solution of shellac, borax or an alkali being the solvent, and nigrosin the colouring-agent; a little glycerine is usually added to prevent cracking of the lac and to preserve the softness of the leather. It is applied with a sponge. When a solution of soap is added to 'ladies' dressing' the soap overcomes the gloss of the shellac, and the preparation gives a dull gunmetal finish to the leather.

Patent-leather Dressing.—This is an oil such as olive or cotton, or vaseline, or white wax reduced to a soft paste by means of turpentine. These are applied by means of a soft cloth. Where the leather is cracked the special preparation used is gun-cotton dissolved in amyl alcohol with a spirit-soluble black dye.

Nappy Dressing.—This is employed for ooze, suède, nappy, and castor leathers, and consists of wood-spirit having in solution a colour insoluble in water. The spirit cleans the nap of the leather, and on evaporation leaves a deposit of colouring-matter which, being insoluble in water, does not markedly soil damp garments. For white leather pipe-clay is still used, but if mixed with light magnesium carbonate a lighter and more pleasing white is obtained. Another article is zinc oxide suspended in water containing a small percentage of an adhesive. This is applied by means of a sponge. For canvas shoes of various colours such substances as lampblack, umber, and red and yellow ochre are mixed with the zinc oxide.

Polishes.—The modern polish consists of a wax basis—carnauba wax, on account of its hardness and high melting-point, being best, although candelilla wax may replace it to a certain extent. There are two chief methods of working these waxes into polish: The wax is emulsified by boiling in a solution of borax; the product is known as white stock. If polish is to be in the form of paste, the white stock while hot is mixed with a hot solution of ordinary household soap and sufficient nigrosin to give the desired depth of colour. The mixture cools as a soft paste that may readily be applied by means of a brush or sponge. If the polish is desired in the liquid form, the best grade of Castille soap is used; a

solution of it does not gelatinise, nor can a satisfactory liquid be obtained unless Castille soap is used. The second method of dealing with the hard waxes is as follows: Carnauba or candelilla, or a mixture of the two with beeswax and ceresin or paraffin, is dissolved in hot turpentine and mixed with very finely pulverised bone-charcoal. When properly cooled there results a firm paste that spreads rapidly under a brush or sponge. When poured into boxes it must be promptly cooled, otherwise there is a separation of the harder waxes from the solvent, the result being a granular, sloppy mass instead of the firm paste desired. If the harder waxes alone were used it would be difficult to prevent separation from the turpentine on cooling, hence the admixture of softer waxes. Beeswax gives also a toughness or lack of shortness to the paste, and a smooth finish that cannot be obtained without it. These softer waxes reduce the gloss available from the carnauba or candelilla. The use of bone-black as a colouring-agent is an attempt to overcome the weakness inherent in the use of the softer waxes, and to add to the gloss obtainable from the waxes that obtained by friction of the bone carbon. For tan leathers the same substances are used, except that a brown or yellow dye and pigment replace the nigrosin and bone-char. The application of the tan polish is frequently preceded by the use of a cleaning solution to remove stains and discolorations. A popular cleaner is a mucilage of tragacanth containing a small percentage of oxalic acid.

The Paste and Liquid Blackings which produce a polish on leather by brush-friction are compounds of ivory and bone black with sulphuric acid and other liquids required to give the preparations consistency. The principle which underlies the preparation of this kind of blacking was explained by the late Mr. Day, of Day & Martin, in his report as a juror of the Great Exhibition of 1851 thus:—

The bone-black, in the state of very fine powder, and the sperm oil are first thoroughly incorporated; the sugar or molasses, mixed with a small proportion of vinegar, is now added and well stirred with the mass; strong sulphuric acid is then gradually poured into the vessel. Thereupon heat is produced and effervescence ensues, the object of the addition of sulphuric acid being to decompose the tri-calcium phosphate and calcium carbonate of the bone-black, acid phosphate and sulphate of lime being formed, which, produced in this manner, give an admirable consistency to the mass, and cause thorough division of the bone-black particles, so that when the blacking is applied to leather it is capable of receiving a high polish. The mixture, after the action of the acid has ceased, is diluted with an equivalent quantity of vinegar, and is bottled whilst it is still warm. The vinegar should not be too weak, else the blacking will not keep.

Malt vinegar should be used in making the blacking. The process of manufacture is excellent, the presence of the treacle in the mixture acted upon by the sulphuric acid going a long way to keep the suspended particles in a state of fine division.

The following are recipes for Liquid Blacking :—

	I	II
Ivory-black	℥xij.	℥viij.
Treacle	℥iv.	℥vj.
Sperm oil	℥j.	℥x.
Vinegar	Oij.	℥xxiv.
Sulphuric acid	℥ij. (by weight)	℥j. (by weight)

Paste Blacking is prepared in a similar manner, but it is noticeable that by using ivory-black alone the characteristics of the best paste blacking are not obtainable ; for it is lamp-black which gives the peculiar odour. Nevertheless, ivory-black is an essential constituent of paste blacking.

I

Ivory-black	℥xvj.
Lamp-black	℥xvj.
Treacle	℥xvj.
Sperm oil	℥iv.
Vinegar	℥v.

Mix and add gradually

Sulphuric acid	℥iv.

When action ceases add

Sulphate of iron	℥ss.
Gum arabic	℥vj.
Hot water	℥v.

Work well in a mortar or mill until the paste is brought to a proper consistency.

II

Ivory-black	℥x.
Treacle	℥x.
Sulphuric acid	℥iv.
Old cod-liver oil	℥ij.

Mix the first two intimately, add the acid and, when effervescence ceases, the oil.

[Bone black is preferred to ivory black by some makers.]

Nubian Blacking was the pioneer of shoe-varnishes, and was the subject of a patent now expired. It was made as follows :—

Mother-liquid Dye

Rectified spirit	1 gal.
Blue-blue aniline	31 dr.
Yellow aniline or naphthalene yellow	45 dr.
Red aniline or fuchsine	8 dr.

The proportions of the dyes may be varied slightly without affecting the result, and it may be necessary, owing to the variation of the dyes, to vary the proportions. If the colour is perfect, it will, after dilution with four times its volume of spirit, appear of a greenish-black hue when viewed through a flint-glass bottle. The specification gives the following as a more permanent colour :—

Rectified spirit	1 gal.
Blue-blue aniline	20·8 dr.
Bismarck-brown aniline	31·2 dr.

Agitate occasionally in the course of twelve hours, and filter if there is any deposit.

The Blacking

Rectified spirit	1 gal.
Mother-liquid dye	¼ gal.

Mix and add the following : —

Camphor	11 oz.
Venice turpentine	16 oz.
Shellac	36 oz.

When dissolved add the following solution :—

Benzine	¼ gal.
Castor oil	3⅗ oz.
Boiled linseed oil	1⅘ oz.

Shake well in order to obtain a perfect mixture.

The following more simple formulas we have tried, and find that they go well :—

Liquid Shoe-polish

I

Sandarac	℥ij.
Gum thus	℥ss.
Shellac	℥iss.
Spirit of turpentine	℥ss.
Lamp-black	℥j.
Spirit	℥vj.

Dissolve the resins in the spirit and add the turpentine and lamp-black. Nigrosin ℥j. may be used instead of lamp-black.

II

White wax, cut in small pieces	℥iij.
Ether	℥iij.
Logwood extract	℥iv.
Gallic acid	℥ij.
Tincture of perchloride of iron	℥j.
Spirit to	℥xvj.

Dissolve the wax in the ether. Allow the extract of logwood and gallic acid to macerate in the spirit with occasional agitation during twenty-four hours; then strain through cloth and add the tincture of iron. Now add the mixture thus prepared to the solution of wax, and again strain through cloth.

Brilliant Boot-polish

Shellac	℥iiss.
Spirit	℥xiiss.

Dissolve and add to a solution of

Curd soap	℥iiss.
Hot spirit (25-per-cent.)	℥iv. ℥vj.
Glycerine	℥ss.

Then add

Best aniline black	℥ss.
Proof spirit	℥xiiss.

Keep for two weeks in a warm place before bottling.

Black Lustre Varnish

Indiarubber	℥ij.
Mineral naphtha	℥iij.

Dissolve and add to the following :—

Asphalte	℥ss.
Drop-black	℥ij.
Spirit of turpentine	℥j.

Mix.

The point to note in regard to the 'Brilliant' polish is that aniline black is exceedingly variable in quality, and should anyone be so unfortunate as to get a dye which gives a brownish colour, 5 gr. of blue-blue aniline should be added. Aniline black is all the better for the addition of a trace of acetic acid ; but in this case that is inadmissible, as the soap neutralises it.

French Shoe-dressing

(*For Kid and Glacé Kid*)

Vinegar	℥xxxij.
Logwood	℥viij.
Bichromate of potassium	℥ss.

Boil and strain while hot into the following mixture, previously prepared:—

Gelatin	℥iv.
Tragacanth	℥iv.
Glycerine	℥iv.
Water	℥xvj.

The latter should be soaked overnight, heated in the morning to dissolve, and strained with pressure. After the logwood and glue mixtures are combined, put indigo ℥ij. into a large mortar, triturate, and slowly incorporate the mixture with it. Put up the dressing in W. M. bottles, with a stubby brush or sponge in the cork.

Leather Waterproofing

Oleic acid	℥iij.
Ammonia soap	℥ij. ℥ij.
Hot water	℥iij.
Stearin	℥vj.
Tannin	℥ij.

Heat the stearin and oleic acid, add half the water to the ammonia soap, and while the oleic mixture is hot add the ammonia solution and the tannin, dissolved in the rest of the water, and mix well.

If a black solution is required add liq. ferri perchlor. ℥j. to the solution of tannin.

Kid-reviver

Logwood chips	℥iv.
Sulphate of iron	℥ss.
Water	Oij.

Boil half an hour. Strain into a mixture of

Powdered tragacanth	℥ss.
Soft soap	℥j.
Glycerine	℥iij.

To this add a solution of

Salicylic acid	℥ss.
Oil of wintergreen	♏iv.
Spirit	℥j.

And add

Water to make	Oij.

Mix well.

Ammonia Soap, mentioned above, is made by adding strong solution of ammonia to oleic acid, until after mixing thoroughly there is a decided excess of ammonia. The waterproofing preparation is elegant, and worth specialising, as a refined kind of dubbin (*see* p. 382).

Dubbin

Whale oil	℥xxx.
Tallow	℥xv.
Beeswax	℥vj.
Burgundy pitch	℥iv.
Castor oil	℥xvj.
Oil of mirbane	℥ss.

Melt the solids together and add the oils, continuing the heat if necessary. Strain, and when nearly cold add the oil of mirbane.

This gives boots a faint polish by simply applying a little of it with a soft rag.

Leather-grease

Linseed oil	℥xvj.
Beeswax	℥ij.
Yellow resin	℥ij.
Burgundy pitch	℥j.

Melt together.

Directions.—During the winter or in rainy weather this grease is excellent for keeping the feet dry. After cleaning the shoes, and without blacking them, warm them at the fire and apply the grease all over, using it liberally at the seams especially.

The formula for dubbin gives a preparation of the old-fashioned sort. Of recent years petroleum products have come largely into vogue, and several which we have had the opportunity of examining have simply been brown petroleum residue. As it is not easy to get this in the market, something like it may be made by mixing together 1 lb. each of common tar and fish oil (such as old cod-liver oil), and adding the mixture to gum thus 1 lb. and crude petroleum jelly 8 lbs., previously liquefied by heat. Strain, add oil of mirbane ℥ss. and oil of citronella ℥ij., and stir until creamy in consistency.

For convenience we include here recipes for Harness-paste:—

I

Mutton suet	℥ij.
Yellow wax	℥vj.

Melt and add while warm

Spirit of turpentine	℥viij.

Add the mixture to the following, previously reduced to powder and mixed:—

Sugar candy	℥vj.
Lamp-black	℥iiss.
Prussian blue	℥ss.
Soft soap	℥ij.

Mix well.

II

Spirit of turpentine	℥x.
Beeswax	℥ij.
Prussian blue	℥ss.
Lamp-black	℥ij.

Melt the wax on a water-bath and add 9 oz. of the turpentine to it slowly and stirring carefully. Then add the powders, previously rubbed up with 1 oz. of turpentine.

Cod-liver oil, 2 oz., may be used in this in place of as much turpentine.

No. 1. is a common formula, but with spirit of turpentine ℥v., which does not make the paste soft enough for boxing. Mutton suet is preferable to lard, because the latter makes a rather smeary preparation.

Brown Harness-composition

Yellow wax	℥v.
Yellow resin	℥j.
Lard	℥iv.
Spirit of turpentine	℥v.

Melt the first three together, remove from the fire, strain, and add the turpentine, stirring constantly, then occasionally until the mixture is creamy, when add a mixture of

Spirit varnish	℥ss.
Spirit colouring	℥ij.

Mix well.

A brown composition is also made from petroleum oil (5), turpentine (1), and hard paraffin (1½), coloured with Nankin or Bismarck brown.

Liquid Harness-blacking

Yellow wax	℥iv.
Linseed oil	℥ij.
Yellow resin	℥j.
Ivory-black	℥iv.
Prussian blue, finely powdered	℥j.
Copal varnish	℥j.
Spirit of turpentine	℥xx.

Melt the wax, resin, and linseed oil by heat; to this add the turpentine and varnish, previously mixed. Mix the black and blue in a large warm mortar, and to them add the oily mixture gradually, and stir to form a homogeneous product.

To be applied with a brush and rubbed up with a soft cloth.

Oleo-Wax Boot and Leather Dressings.—As stated on p. 377, the leathers now used in bootmaking require a polish different in composition from old-fashioned blacking, and consisting essentially of a wax with turpentine and a fixed oil to assist in spreading it on the leather and help to keep the latter pliable.

Typical Paste Basis

Carnauba wax	℥x.
Beeswax	℥iij.
Stearin	℥j.
Oleic acid	℥j.
Oil of turpentine	℥xlv.

Melt the three solids by heat, dissolve the colouring required in the oleic acid, add to the 'melt,' then gradually add the turpentine, keeping the mixture at a temperature of 40° C.

Typical Cream Basis

Carnauba wax	℥j.
Beeswax	℥iv.
Pearlash	℥vj.
Boiling water	℥vj.
Oil of turpentine	℥xl.

Melt the waxes and add to the boiling solution of pearlash, mix, and remove from the fire. Now add as much more boiling water, mixing all the time, and gradually work in the turpentine.

The bases on p. 383 may be used for any colour of leather, but it is preferable to stain them for respective kinds. Oil-soluble blue, nigrosin, red, green, and brown dyes (dissolved in the oleic acid) may be used for the paste in the proportion of 10 to 30 gr. to 10 oz. of paste. For the cream use the same dissolved in the turpentine. Although most of the formulas which follow are for brown polishes, the colouring may be modified as desired. *See also* the Supplementary Chapter.

Brown Leather-dressing

(*First published formula*)

Yellow wax	ʒiv.
Potassium carbonate	ʒss.
Yellow soap	ʒij.
Water	ʒxij.

Boil together and add

Spirit of turpentine	ʒv.
Phosphine	gr. iv.
Water	ʒss.

The phosphine to be dissolved in the water. Mix the whole thoroughly.

Tan Shoe-paste

I

Yellow wax (dark)	ʒj.
Palm oil	ʒj.
Oil of turpentine	ʒiij.

Melt together on a water-bath and colour if desired with Nankin brown gr. v. dissolved in a little spirit.

This to be put up in tin boxes to retail at 1*d.* upwards.

II

Carnauba wax	ʒviij.
Sperm oil	ʒiij.
Oleaceous butter-colouring	q.s.
Oil of turpentine	ʒxij.
Powdered soap	ʒj.
Oil of mirbane	ʒj.

Melt the wax and first two oils together, remove from the source of heat and add 10 oz. of the oil of turpentine carefully, constantly stirring, then add the soap and oil of mirbane previously mixed with 2 oz. of oil of turpentine, and mix thoroughly.

Brown Boot-creams

I

Yellow wax	ʒvj.
Linseed oil	ʒx.
Spirit of turpentine	ʒxxx.

Dissolve by means of a water-bath in a closed vessel and add

Household soap	ʒiv.

Previously dissolved in

Water	Oij.

Stir continually till cold. Then colour with

Nankin brown	ʒiij.
Spirit	ʒiss.

Previously rubbed together until uniform.

II

Finest roll annatto	ʒss.
Household soap	ʒiss.
Yellow wax	ʒvj.
Old cod-liver oil	ʒiv.
Oil of turpentine	ʒx.
Distilled water	ʒxxiv.

Cut the annatto into small pieces,

put it into a mortar, and make it into a cream with 3 oz. of boiling water. Dissolve the soap in the rest of the water by heating, and have ready in a Winchester, mixed with the annatto. Melt the wax and cod-liver oil together, and add the turpentine gradually without increasing the heat. Add the mixture 4 oz. at a time to the soap solution, shaking vigorously until all is combined.

Brown Boot-top Liquid

Saffron	gr. xv.
Boiling water	ʒij.

Infuse and strain, then add

Tincture of rhubarb	ʒiss.
Infusion of rhubarb to	ʒvj.

Mix.

White Boot-top Cleaner

Cream of tartar	ʒij.
Oxalic acid	ʒj.
Alum	ʒj.

Mix.

Direct the powder to be mixed with 3 pints of sour milk and to be used to rub the tops.

Leather (Maroon), to Restore

Sponge with oil of turpentine and when dry apply the following with a cloth :—

Yellow wax	ʒij.
Gum thus	ʒj.
Oil of turpentine	ʒviij.

Dissolve by gently heating.

Sometimes it may be necessary to apply a little maroon dye before the polish.

NOTE.—White of egg is used for polishing the backs of books.

Chair-leather Polish

Five eggs.	
Sperm oil	ʒvj.
Acetic acid	ʒvj.
Glycerine	ʒvj.
Oil of turpentine	ʒj.
Methylated spirit	ʒv.
Water to	ʒxxx.

Beat up the eggs thoroughly with an egg-beater. Mix the oils, acid, and glycerine, and gradually incorporate with the eggs. Transfer to a bottle, and gradually add the spirit diluted with its own volume of water ; then make up with water, perfuming if desired with birch-tar oil.

Directions for Use.—Pour about a teaspoonful of the polish upon the chair-leather, and rub it over the surface with a soft cotton cloth until it is dry. A few minutes later polish gently with a soft rag.

White-leather Paste

Pipeclay	ʒxvj.
Spanish white	ʒviij.
Flake white	ʒvj.
Precipitated chalk	ʒiv.
Spermaceti	ʒvj.
Lard	ʒviij.

Melt the lard and spermaceti together, and with them thoroughly mass the other ingredients.

Boot-sole Finish

Pipeclay	ʒiiss.
Iron peroxide	ʒss.
Boric acid	ʒj.
Citronella oil	ɱv.
Gelatin	ʒiss.
Water	ʒx.

Soak the gelatin in the water until soft, add the acid, and dissolve by heat. When cold, gradually add to the other ingredients previously well triturated.

PEST EXTERMINATORS

For want of a better title, we group under this one formulas or such preparations as fly-papers, bug and insect destroyers

generally, moth-killers, and mouse and rat poisons. There is a large variety of such articles in trade, and it is difficult to give a proper selection without omitting some minor kinds which have their strong adherents, or unnecessarily extending the pages of the volume. We take, therefore, the medium course of giving here and there a running commentary upon sections to which that method is applicable.

Fly-papers.—The varieties of these are well known. The old arsenic paper may only be sold by registered chemists and druggists, and under the regulations of the Arsenic and Pharmacy Acts. The papers are made from coarse unsized paper, of a claret-brown colour, by dipping in either of the following solutions and drying :—

I

Arsenious acid	ʒiv.
Solution of potash	ʒxvj.
Sugar	lb. ij.
Water	Cong. j.

Boil together until the arsenic is dissolved.

II

Sodium arsenate	ʒj.
Simple syrup	ʒiv.
Water	ʒxvj.

Dissolve.

Non-poisonous fly-papers of the Papier Moure class are dipped in an infusion of quassia. It has been publicly stated that quassia is the only drug in papier moure. The following decoction gives more attractive papers :—

Quassia	ʒxvj.
Colocynth	ʒij.
Long pepper	ʒiv.
Water	Cong. j.

Boil until the decoction is reduced to 4 pints ; strain, and dissolve in the clear liquid 4 oz. of sugar.

The colocynth is sometimes omitted.

Cobalt Fly-papers are made by adding chloride of cobalt ʒiss. and tartar emetic ʒj. to the quassia decoction as above. This paper is as good as the arsenical, and has not, of course, the same toxic properties.

Sticky Fly-papers have been one of the most astonishing evolutions connected with pharmacy, for, although our grandmothers knew the 'catch 'em alive' man (whose cry was familiar in London in the early decades of the nineteenth

century), the sticky fly-paper has improved to the point of being as elegant as it is sticky. Resin, oil, and golden syrup were the ingredients with which the early makers conjured, and this fact stuck closely to the trade when pharmacists took it up. A rather superior person suggested that elegant papers could be made by dissolving resin (4 oz.) and castor oil (2 oz.) in a pint of methylated spirit, and flavouring with oil of lemon (℥j.) ; this solution to be painted over the paper. But there was no thought of the permeation of the paper with this varnish. The method is thoroughly impracticable. So are most of the methods in which resin is used. For example, (I.) resin 4 and castor oil 2, and (II.) resin 10, gum thus 5, linseed oil 7, with or without the addition of golden syrup or honey. In time it came to be understood that birdlime was the proper thing to use, and one of the most successful makers used a carbon-bisulphide solution of birdlime, but the method became impracticable. The next step was the discovery that Birdlime is nothing more or less than boiled linseed oil, and the recipe for it in *The Chemist and Druggist Diary* for 1894 is (we have been told by an authority) a correct description of the way to make it. It was brief enough, viz. :—'An artificial birdlime is made by boiling linseed oil until it becomes stringy.' The 'birdlime' requires the addition of a non-drying oil, and for this purpose there is nothing better than castor oil. But sticky fly-paper makers have their own secrets in regard to that—*e.g.*, one uses neatsfoot oil. We have come, however, to the zenith of the evolution era, and boiled linseed oil stands out as the basis of the popular fly-paper. If any retailer is rash enough to wish to manufacture these papers instead of buying them, here is the formula to start from :—

Boiled linseed oil	℥vj.
Gum thus	℥j.
Castor oil	℥ij.

The quantities of the ingredients must vary according to the condition of the linseed oil. It is necessary to have a non-drying oil, such as castor oil in the composition. Vaseline oil is also good, and a trace of dripping is not an objection

because animal matter of any kind helps to draw the flies, especially if it be putrid. A good quality of parchment-paper must be used, and the composition spread upon it while hot with a stiff brush; the paper then folded and the edges turned over, or the composition prevented from exuding by some other means. Several methods of doing this are protected by patent. Japanese birdlime is best for coating Fly-strings.

Bug-poisons do not yet rank as a leading 'profitable extra,' because few if any chemists have had the courage to make them a counter-speciality. The active ingredient in most of the poisons is mercury in some form. For example, 3 oz. of blue ointment dissolved in as much oil of turpentine as will make up a winebottle is a good thing and a popular household remedy. It is put into all wood chinks with a feather. Corrosive sublimate is also a favourite destroyer, and the chief ingredient in many preparations—flavoured with such things as tincture of insect-powder, camphor, tobacco, and spirit, apparently on the principle of making it pleasant for the bugs. We quote two of these:—

I

Corrosive sublimate	ʒiv.
Sal ammoniac	ʒiv.
Water	Cong. ss.

Dissolve and add

Glycerine	ʒiv.
Wood naphtha	Cong. ss.

Mix.

II

Corrosive sublimate	ʒj.
Water	Ovj.

Dissolve and add

Tincture of insect-powder (1 in 4)	ʒxvj.

Mix.

These preparations are to be brushed over the parts where the pests are, and it is a good plan to add about half a pint of either solution to each bucketful of whitewash used for cleaning the walls and ceilings of the rooms. Another Good Bug-lotion, in which there is no corrosive sublimate, is made by dissolving in a gallon of tobacco tincture (1 lb. of tobacco to a gallon of proof spirit) 4 oz. each of boric and carbolic acids and 8 oz. of salicylic acid, with a few drachms of oil of melissa or eucalyptus partly to cover the tobacco smell, which, however, is really fatal to the use of this remedy

in many cases, as it takes a long time to get the smell out of a house. Sulphurous acid is a good remedy, simply put into the wood chinks; but, beyond all, conscientious use of soap and water—or, in brief, cleanliness—is the bug's dread. We may explain here that the American use of the word 'bug' is not, as with Britishers, restricted to the house-bug, but is applied generally to many insect pests—such as the water-bug, June bug, potato-bug, &c. So that 'bug' means 'fly' with them. Insecticides for plants are dealt with on pp. 409 *et seq.*

Moth Cake or Brick

I

Cedar-dust	ʒj.
Camphor	ʒj.
Cassia powder	ʒj.
Orris powder	ʒj.
Oil of lemon	ɱx.
Powdered myrrh	ʒij.
Powdered curd soap	ʒij.

Mix, adding sufficient S.V.R. to mass, and press into cakes.

II

Orris in coarse powder	ʒj.
Chalk	ʒiss.
Plaster of Paris	ʒss.
Lavender-water	ʒij.
Rose-water, enough to make a paste.	

Mould the paste into suitable cakes, dry, and wrap in tinfoil.

Moth-powder

I

Camphor	ʒiv.
Benzoin	ʒj.
Black pepper	ʒij.
Cedar sawdust	ʒv.

Mix after reducing the solids to a coarse powder.

II

Patchouli-leaves	ʒx.
Valerian-root	ʒv.
Camphor	ʒiv.
Orris-root	ʒv.
Sumbul-root	ʒv.
Oil of patchouli	ʒss.
Otto of rose	ʒss.

Coarsely powder the solids, mix, and add the oils.

III

Naphthalin	ʒix.
Camphor	ʒiij.

Melt by a gentle heat and add

Coumarin	gr. iij.
Nerolin	gr. ij.
Oil of mirbane	ɱx.

Mix, and while liquid pour into moulds.

IV

Camphor	ʒiiss.
Insect-powder	ʒiiss.
Naphthalin	ʒj.
Carbolic acid	ʒss.

Mix all together, the solids being in coarse powder, and pack in canisters.

These preparations are for keeping in small quantities in wardrobes, drawers, &c., wherever moths may congregate. Naphthalin in one form or another is now a favourite preventive, as, for example, in No. III.

It is as well that it should be understood that none of these things kills moths. Hundreds of tons of camphor have been used with that object, but no one has yet produced a moth slain by it. All that camphor and other things like it do is to prevent the moths going where they are. They do not like the smell, but if forced to it by hunger, or rather by the desire to deposit their eggs in a nice warm place, then they will put up with the camphor, &c. The chief facts in mothology are: Moths seldom appear before April, and are with us until August or September. They come from last season's eggs, which have been deposited in any hairy or woollen article which the mother had found convenient. Each lay contains 18 to 140 eggs, and most of these in from three to eleven days are hatched into white soft larvæ or worms, which make for themselves a comfortable case from the cloth in which they are deposited. They begin to grow and use more of the cloth in the process, this continuing for a month, when the worm is at its biggest; then it begins to wander and make those tracks over clothing which are so heartbreaking; but by-and-by it seeks a cosy spot, and there, fastening up the ends of its case, becomes the full-sized cocoon, sleeps all winter, and in the spring is ready to take wings, find a mate, and, if it be of the female persuasion, it may return to the home of its birth to do 'the like' in a succeeding generation.

It is apparent from this description that the moth itself is a harmless insect, and that the real enemy to attack is the eggs or the larvæ. The best thing for killing them is benzine or any other liquid which will dissolve the waxy coating of the eggs. It is best applied as a spray to all joints of wardrobes and drawers, and to clothing which is suspected of being attacked. For retail purposes the benzine may be perfumed or otherwise medicated, but the benzine is the thing that does the work. It is obvious from what has been said that the usual time for attacking moths—namely, at the end of the winter—is the wrong time, and those who wish to put down the pest should be assiduous from July to September in brushing and applying the benzine spray. When springtime comes the preventives of the camphor type may be used as abundantly as the purse permits.

Moth-solution

Carbolic acid	ʒj.
Camphor	ʒj.
Benzine to	ʒxvj.

Dissolve.

To be used as a spray, or upon blotting-paper placed in wardrobes, &c.

Mosquito-preventives.—One of the peculiarities of men is that they think they can put down mosquitoes, and they demand certain fumigators and lotions to assist them in the process. There is no harm in supplying them.

Mosquito-pastilles

I

Powdered charcoal	ʒxvj.
Nitrate of potassium	ʒij.
Carbolic acid	ʒiss.
Insect-powder	ʒviij.
Tragacanth mucilage	a sufficiency

Make into a stiff paste with the mucilage, and form into cones weighing about ʒj. each.

II

Powdered charcoal	ʒxvj.
Nitrate of potassium	ʒij.
Benzoin	ʒiv.
Hard tolu balsam	ʒij.
Insect-powder	ʒiv.
Tragacanth mucilage	a sufficiency

Powder the solids and make into cones in the same manner as No. I.

For the Extermination of Ants numerous methods have been suggested, and as there are black, white, and red ants it is not to be expected that there is a universal remedy. Turpentine, paraffin, and all other strong-smelling substances they hate, and to prevent them coming into houses either paraffin or turpentine should be freely sprinkled outside and inside the door. Solution of sulphurated potash is also good, but this keeps away larger visitors. Borax mixed with camphor (ʒj. to 1 lb.) or powdered cloves (same proportion), sprinkled where they most do congregate, often make them migrate. So also do such mixtures as quicklime 1 lb. and camphor ʒj. One of the cheapest and best things to drive away ants is a solution of crude carbolic acid (3 oz. in a gallon of water): the insects positively hate this.

Ant-poison

Cape aloes	1 lb.
Water	1 gal.

Dissolve and add

Camphor-flowers	6 oz.

Mix the aloes decoction slowly with the camphor.

How to Use this: Pour it into the ants' nests, brush with it trees and plants which they infest, and put some of it wherever they are a nuisance.

Paraffin oil alone or with 4 oz. of naphthalin or camphor to the gallon, is also good for getting rid of ants.

Blackbeetles and Cockroaches are not killed by insect-powder, but if it is sprinkled near their holes and over the floors the last thing at night, it intoxicates them, and they can be swept up in the morning. The best of the poisons for these pests contain red-lead, such as:—(1) Red-lead ℥j., oatmeal ℥iv.; (2) borax ℥vj., red-lead ℥ij., sugar ℥iij., cocoa-powder ℥j. The following is also good:—(3) Precipitated carbonate of barium ℥j., borax ℥ij., oatmeal ℥iij. It must be confessed that the insects frequently thrive on these powders, but ferrous arsenate is a deadly beetle-powder.

Mouse and Rat Poisons.—All preparations containing white arsenic must, according to British law, be coloured. Prussian blue is commonly used. Strychnine vermin-killers should, by preference, be made with sulphate of the alkaloid, and not the pure alkaloid, because the former, being more soluble, acts quicker. The addition of certain essential oils to phosphorus paste, in order to cover the odour of the poison and attract the vermin, is advisable, but sooner or later the animals who escape know the odour and shun the poison. The lure should be changed occasionally. The best diluents for arsenic and strychnine are fine oatmeal and wheatmeal, and in making pastes beef dripping is preferable to other fats. The vermin-killers which cause rats to die in their holes, and yet do not create a bad odour from the decomposition of the bodies, are composed of tartar emetic or barium carbonate. The latter is understood to cause intense thirst in the animals, and this fact has suggested the addition of calcium sulphate to such compounds, the result being that when the animals drink the calcium sulphate becomes hydrated, and consequently the animals are literally petrified. We ought to say that these special claims for vermin-killers are largely imaginary.

Powder Vermin-killers.—At the British Pharmaceutical Conference in 1889, the late Mr. A. H. Allen reported upon about two dozen vermin-killers (*C. & D.*, 1889, II., 371), and the results obtained showed some curious points. First, the poison in most of them is strychnine; secondly, rice-flour and wheat-flour are used as the diluents; thirdly, carmine,

Prussian blue, ultramarine, and soot are the colours commonly used; and, fourthly, the proportion of strychnine varies from 4·3 to 41·8 per cent., but 12 per cent. is an average strength, or 2 gr. of the alkaloid in a 3*d.* packet weighing 18 to 20 gr. Mr. Allen strongly recommended chrome-green as a colouring agent, especially because it is easily detected should the powder be used for criminal purposes. At the same time he gave an analysis of Battle's Vermin-killer, showing it to be composed of strychnine 5·8 per cent., barium carbonate 45 per cent., soot and flour 49·2 per cent. Rough on Rats has frequently been analysed, and arsenic found to be the chief constituent. Similar preparations to it are made with tartar emetic—*e.g.*, arsenic 6 parts, tartar emetic 4 parts, with sufficient colouring. Tartar emetic is supposed to induce vomiting in larger animals than rats, hence such mixtures are claimed to be harmless to dogs and cats. The following are a few formulas which have been published in *The Chemist and Druggist*, and which we know to be good :—

I

Strychnine sulphate	ʒj.
Sugar of milk	ʒiij.
Prussian blue	gr. v.
Sugar	℥ss.
Oat-flour	℥ss.

Triturate the first three ingredients in a mortar for five minutes, then add the sugar and flour. Mix well.

II

White arsenic	ʒj.
Ultramarine	gr. x.
Cornflour	℥ss.
Sugar	ʒij.

Mix in the same manner as No. 1. From 10 to 20 drops of tincture of asafetida may be added.

Used by Ratcatchers

Powdered squill	℥j.
Barium carbonate	℥iv.
Oil of anise	gtt. v.

Mix.

Spanish Rat-poison

Pulv. cantharidis	℥j.
Pulv. sacch. impur.	ʒj.
Pulv. moschi	gr. j.
Ol. rhodii	gtt. x.
Ol. carui	gtt. x.
Pulv. byni	℥x.

Rub the musk and oils with the brown sugar and cantharides, then add to the malt-flour, and mix well; finally sift.

Rats are so artful that it is often exceedingly difficult to catch them or get them to eat poison. It is a good plan, therefore, to feed them for a night or two with equal parts of sugar and oatmeal flavoured with aniseed or other spice, then

mix the same food with its own weight of plaster of Paris, or dose it with another poison. Ground biscuit is another good thing to feed the vermin with and to use as a diluent for the poison instead of wheat and rice flour, which are not nearly so attractive as a tasty biscuit. Rat-cake is a coarse biscuit containing 20 per cent. of arsenic.

Phosphorus Paste has the distinction above most vermin-killers of not being, in Great Britain, a 'poison.' There are many stupid formulas for it, yet there is, perhaps, nothing so easy to make as an active and fatal phosphorus paste with the phosphorus in a practically unoxidised state. The points to note are that phosphorus readily dissolves in hot fats (1–20 or more), and that the poison should not be present in such excessive quantity as to drive away the vermin.

I

Phosphorus	ʒj.
Beef-dripping	℥v.
Wheat-flour	℥ij.
Sugar	℥j.
Powdered biscuit	℥j.
Water	a sufficiency

Melt the dripping and put it into a wide-mouth bottle placed in a pan of hot water. Drop in the phosphorus (cut small), cork, and shake the bottle until the phosphorus is dissolved (dipping into the hot water occasionally). Place the powders in a warm mortar and pour the phosphorised dripping upon them, mix, and add warm water to make a soft paste.

II

Phosphorus	ʒj.
Pure carbon bisulphide	℥ss.
Beef-dripping	℥v.
Biscuit powder	℥iij.
Comp. tragacanth powder	℥ss.
Oil of anise	gtt. x.
Oil of peppermint	gtt. v.
Boiling water	℥iij.

Heat the dripping until it is quite clear, and transfer to a hot mortar; pour into this the carbon bisulphide in which the phosphorus has been dissolved; stir, then add the two powders and the oils, and finally the boiling water all at once, kneading the mass thoroughly until a perfect mixture is obtained.

These are practically alike, but by dissolving the phosphorus in the carbon bisulphide the paste is made much more quickly. The carbon bisulphide must be the redistilled or odourless variety. Most of the bisulphide is dissipated by the hot water, and, as the solvent evaporates, access of air, therefore oxidation of phosphorus, is prevented. Another good way to make the paste is to melt lard in a wide-mouth bottle in a water-bath; introduce into it ½ oz. of phosphorus for every pound of lard; then add a pint of proof spirit; cork the bottle firmly, keeping the contents heated to 150° F., and agitate

smartly until the phosphorus becomes uniformly diffused, forming a milky-looking liquid. This liquid on cooling affords a white compound of phosphorus and lard, from which the spirit spontaneously separates, and may be poured off to be used again, as it only serves to diffuse the phosphorus in very fine particles through the lard. This phosphorised lard, on being warmed very gently, may be poured into a mixture of its own weight of barley or wheaten meal and sugar, incorporated therewith, and after flavouring with oil of rhodium, &c., the dough may be made into pellets for distribution to the mice. Or mix the lard with powdered cheese (3 and 1), to be spread on bread.

Rat-bait

Oil of rhodium	♏xx.
Oil of caraway	ʒj.
Oil of lavender	♏v.
Oil of aniseed	♏x.
Tincture of musk	♏v.

Use 10 drops to the ounce of fat.

Rat-paste without Phosphorus

I

Tartar emetic	ʒj.
Powdered squill	ʒj.
Carbonate of barium	ʒij.
Beef dripping	ʒiss.

Mix well.

II

One onion, chopped small.	
Lard	ʒxvj.
Beef suet	ʒiv.

Brown the onion with a little of the lard, then add the suet and the rest of the lard; stew for ten minutes and strain. When half-cold add

Salicylic acid	℈iv.
Barium carbonate (pptd.)	ʒxvj.

Tint blue with ammoniated solution of copper acetate (ʒiss.).

Arsenical Paste

Arsenic	ʒj.
Oat-flour	ʒviij.
Indigo	ʒj.

Mix well by trituration and add

Oil of anise	♏x.
Melted dripping	ʒxij.

Beat into a paste.

Non-scheduled Rat-poison

Biscuit-flour	ʒiv.
Barium carbonate	ʒiv.
Caster-sugar	ʒij.
Oil of anise	♏v.
Oil of cummin	♏v.
Essence of musk	♏x.

Mix well.

Moles, to Poison

Worms are dipped in a concentrated solution of strychnine in dilute sulphuric acid, and laid in the runs of the moles. This answers very well indeed.

The following pills get rid of moles very quickly when put into their holes:—

Ac. arsenic.	gr. ss.
Pulv. acaciæ	gr. ss.
Amyli	gr. ij.
Syrupi	q.s.

Ft. pilula.

Strychnine has a better effect than arsenic.

Rat-poisons are sometimes required in pill form, for which purpose all that is necessary is to dilute any of the powder poisons with three times their weight of malt flour and make into soft pills with equal parts of glycerine and syrup.

DISINFECTANTS

The subject of disinfectants is too vast to treat with anything like thoroughness in a book of formulas—indeed, this is not necessary except for those who wish to undertake the manufacture of disinfectants on a large scale, and to such we commend the book on 'Disinfection and Disinfectants,' by Dr. Samuel Rideal, published by Sanitary Publishing Co. at 7*s.* 6*d.* This work contains an intelligent description of all the substances used in the manufacture of disinfectants, and notes on practically the whole of the popular disinfectants, especially those which are the subject of letters patent. For a full account of the 'Bacterial Standardisation of Disinfectants' *see also* the *C. & D.*, 1910, I., 193. For the instruction of the public the National Health Society, 53 Berners Street, London, W., publish a penny pamphlet on 'Disinfection and Disinfectants,' the information in which is sufficiently precise to serve for guidance in cases of infectious sickness.

By far the larger proportion of disinfectants are used merely for counteracting bad smells, although their primary object is to kill pathogenic micro-organisms (disease microbes) and thus prevent the spread of infectious diseases. Bacteriologists reckon the value of disinfectants by their antiseptic power—that is, the quantity of the substance in a known volume of putrifiable or fermentable material required to prevent the growth of specific micro-organisms. This is now referred to as the carbolic-acid (or Rideal-Walker) coefficient (*see* Supplementary Chapter), and it is of commercial importance especially in the case of exported disinfectants, for Victoria and South Africa have special regulations respecting the strengths of disinfectants imported. Generally, however, disinfectants are more used for their anti-malodorous properties than for their anti-microbic power. The following table showing the parts

of substances per thousand required to prevent the growth of the common micro-organisms in culture media at the normal temperature, two days' contact being allowed, is a record of experiments made by Miquel :—

Mercuric iodide	0·025	Potassium permanganate	3·50
Silver iodide	0·03	Lead nitrate	3·60
Hydrogen peroxide	0·05	Aniline	4·00
Mercuric chloride	0·07	Alum	4·50
Silver nitrate	0·08	Tannic acid	4·80
Osmic acid	0·15	Arsenious acid	6·00
Chromic acid	0·20	Boric acid	7·50
Iodine	0·25	Sodium arsenate	9·00
Chlorine	0·25	Chloral hydrate	9·30
Hydrocyanic acid	0·40	Sodium salicylate	10·00
Bromine	0·60	Iron sulphate	11·00
Chloroform	0·80	Amylic alcohol	14·00
Copper sulphate	0·90	Ether	22·00
Salicylic acid	1·00	Calcium chloride	40·00
Benzoic acid	1·10	Borax	70·00
Potassium bichromate	1·20	Alcohol	95·00
Potassium cyanide	1·20	Barium chloride	95·00
Picric acid	1·30	Potassium sulphocyanide	120·00
Ammonia gas	1·40	Potassium iodide	140·00
Aluminium chloride	1·40	Potassium cyanide	150·00
Zinc chloride	1·90	Sodium chloride	165·00
Lead chloride	2·00	Glycerine	225·00
Mineral acids	2 to 3	Sodium hyposulphite	275·00
Carbolic acid	3·20		

It will be seen from this that the popular disinfectants which owe their virtues to mercuric chloride, hydrogen peroxide, and carbolic acid are based upon fairly sound data, but it is in the application of the substances that we break down. For example, we pour a teaspoonful or two of permanganate solution into a closetpanful of fluid, making the dilution probably about 1 in 7,000, while we need 1 in 300 for complete bactericidal efficacy. Another circumstance which must not be overlooked is that what will kill the full-fledged bacillus may have no effect whatever upon the spores of the micro-organisms. This was admirably shown by Koch in some experiments undertaken for a Continental Board of Health. His object was to determine the value of reputed disinfectants, and he found that a 2-per-cent. solution of carbolic acid was almost inert. Sulphurous acid was powerless against spores; but bacilli

and micrococci, when exposed to the fumes in a box, were killed within twenty minutes, but not so in a room. Chloride of zinc was just as harmless, although it is one of the oldest disinfectants in use.

Spores were killed by fresh chlorine-water, also by 2-per-cent. bromine-water, 1-per-cent. aqueous solution of corrosive sublimate, 5-per-cent. solution of permanganate of potassium, and 1-per-cent. osmic acid, within one day; 1-per-cent. formic acid in four days, oil of turpentine in five days, solution of chloride of iron in four days; 1-per-cent. arsenious acid, 1-per-cent. quinine, 2-per-cent. muriatic acid, within ten days; and ether within thirty days. The following were found to be inert or possessed of little influence:—

Distilled water, alcohol, glycerine, oil, carbon bisulphide, chloroform, benzol, petroleum ether, ammonia, saturated solution of common salt, bromide and iodide of potassium, 1-per-cent. sulphuric acid, sulphate of zinc and copper, alum, 1-per-cent. permanganate of potassium, chromic acid, the chromates and bichromates, chlorate of potassium 5 per cent., boric acid 5 per cent., acetic acid 5 per cent., tannic acid 5 per cent., benzoate of sodium 5 per cent., iodine 1 per cent., thymol 5 per cent., salicylic acid 1 per cent.

As regards substances which prevent the further development of spores, the following results were obtained. The first numbers mean retarding the development, the rest totally preventing it:—

Corrosive sublimate	1 : 1,600,000	1 : 320,000
Oil of mustard	1 : 330,000	1 : 33,000
Arsenite of potassium	1 : 100,000	1 : 10,000
Thymol	1 : 80,000	—
Oil of turpentine	1 : 75,000	—
Hydrocyanic acid	1 : 40,000	1 : 8,000
Oil of peppermint	1 : 33,000	—
Chromic acid	1 : 10,000	1 : 5,000
Picric acid	1 : 10,000	1 : 5,000
Iodine	1 : 5,000	—
Salicylic acid	1 : 3,300	1 : 1,500
Permanganate of potassium	1 : 3,000	—
Hydrochloric acid	1 : 2,500	1 : 1,700
Camphor	1 : 2,500	—
Eucalyptus oil	1 : 2,500	—
Benzoic acid	1 : 2,000	—
Borax	1 : 2,000	1 : 700
Carbolic acid	1 : 1,250	1 : 300

According to Koch's experiments corrosive sublimate, chlorine, bromine, and iodine are alone of value in killing spores.

Essential oils are the most ancient of antiseptics, and their power has been estimated by many. The latest factors are by Martindale (quoted in *C. & D.*, 1910, II., 832), who experimented with the oils in aqueous or saponaceous solutions, determining their carbolic-acid coefficients in inhibiting the growth of *Bacillus coli communis*, the coefficients obtained being as follows :—

Origanum oil	25·76	Otto of rose	5·94
Thymol	25·29	Cassia oil	5·35
Carvacrol	21·32	Wintergreen oil	4·64
Thyme oil	14·85	Eucalyptus amygd.	4·35
Geraniol	12·29	Lavender oil	4·94
Cinnamon-leaf oil	9·66	Lemon oil	3·94
Oil of cinnamon-bark (52 per cent. aldehyde)	8·91	Almond oil, essential, *sine acid. prussic.*	3·76
Oil of cloves	8·88	Eucalyptol	3·76
Cinnamic aldehyde	8·02	Eucalyptus Globulus oil	3·55
Citronellol	8·11	Light oil of tar (rectified)	2·17
Oil of cinnamon-bark (82 per cent. aldehyde) in soap	7·92	Sandal-wood oil	1·67
Ditto (in water)	7·10	Birch tar oil	1·67
Rosemary oil	5·94	Cade oil	1

One part of origanum oil does the work of about 26 parts of carbolic acid. The English Local Government Board's Solution is—

Corrosive sublimate	℥ss.
Hydrochloric acid	℥j.
Aniline blue	gr. v.
Water	Cong. iij.

Dissolve.

This is used as it is for immersing clothes, &c., and for adding to bedroom vessels. The ingredients for the solution (the mercuric chloride with an equal proportion of salt or sal ammoniac and the colouring) are generally made into compressed tablets, each of which makes a pint or quart of disinfectant. Mercuric chloride is also relied upon in plague districts, where the consumption is enormous.

It will be observed from the first table that hydrogen peroxide holds even a higher place as a bactericide than corrosive sublimate, over which it possesses the further advantage of being destructive to the products of putrefaction; indeed, the latter characteristic is the one for which it is chiefly employed, and it is probable that essential oils act in the same manner through the production of hydrogen peroxide by the influence of air and moisture. In 1878 Mr. C. T. Kingzett, taking advantage of the last-mentioned reaction, patented a process for the production of Sanitas, which consists essentially in pumping air through turpentine and warm water, and the process has since been improved by the incorporation of camphor, thymol, eucalyptus oil, and other substances with the turpentine. Hydrogen peroxide and camphoric acid are the chief products of the prolonged action of the air and moisture upon essential oils, and these are contained in the aqueous and oleaceous forms of 'Sanitas,' together with aromatic principles which make this disinfectant one of the most pleasant in use. Kingzett's 'bactericide' is a solution of corrosive sublimate in 'Sanitas' fluid, so that it exhibits the antiseptic and disinfectant properties of two of the best substances in the first list.

Carbolic-acid Disinfectants are most commonly in use. The crude acid is obtained from tar oils, or, in the distillation of coal-tar, a special fraction containing most of the phenol is collected as 'carbolic oils' before the creosote oils are distilled, or from the crude oils, which contain, besides carbolic acid, naphthalene and other hydrocarbons as well as cresylic acid. The carbolic acid is extracted by treating with soda lye of s.g. 1·090 to 1·095, which dissolves chiefly carbolic acid and little naphthalene, &c. The solution of sodium carbolate is afterwards decomposed with a mineral acid, and the carbolic acid separated and subsequently purified. Those who wish full information on this subject should consult Lunge's 'Coal-tar and Ammonia,' published by Gurney & Jackson, an expensive but invaluable work. Upon the nature of the material employed the quality of the resulting acid depends, and as increase of strength of the soda solution has the effect

of dissolving more or less of the hydrocarbons, these bodies may occur in crude carbolic acid in quite undesirable quantity. The Board of Trade stipulates that the acid supplied to merchant and other ships 'should contain not less than 80 per cent. of carbolic or cresylic acid.' We may explain here that cresylic acid is the liquid or non-crystallisable portion obtained in the crystallisation of carbolic acid, and the best crude carbolic acid in the market consists largely of this liquid. It contains the three isomeric cresols (ortho, meta, and para), but chiefly paracresol, and is more powerful as an antiseptic than phenol (the crystallisable portion of crude carbolic acid). The difference, chemically, between the two is that cresol is phenol with a hydrogen atom replaced by a methyl group :—

Phenol, $C_6H_5.OH$. Cresol, $C_6H_4.CH_3.OH$.

In combination with alkalies carbolic acid is almost valueless as an antiseptic and disinfectant, and this fact must be borne in mind in preparing Carbolic Disinfecting-powders. Lime is an unsuitable basis for these. The best substances to use are gypsum, infusorial earth, bricks, and the residue obtained from the manufacture of aluminium sulphate from shale or kaolin—in fact, any cheap non-alkaline silicious substance capable of absorbing the acid without combining with it may be used. The proportion of carbolic acid should be at least 15 per cent., but as much as 30 per cent. can be taken up by kieselguhr. Peat-earth and sawdust are also recommended as absorbents. The following recipe is representative :—

Carbolic acid	2 gals.
Kieselguhr	14 lbs.
Gypsum in lump	1 cwt.
Red ochre	½ lb.

Grind the gypsum in a roller-mill along with the ochre. Mix the kieselguhr with about twice its weight of the powder, add the acid gradually to this, stirring well, then the rest of the powder. Pass through an inclined sieve made of wire netting (½-inch mesh) several times, and finally sift through a No. 10 sieve.

Miscible Disinfectant-fluid

I

Coal-tar distillate (of sp. gr. exceeding 1·00)	100 parts
Resin	85 parts
Caustic soda or potash (30° B.)	60 parts
Vegetable oil	20 parts

Liquefy the resin, add the coal-tar distillates, and when thoroughly incorporated, and while the mixture is still warm, add the caustic soda, and lastly the oil.

This is from a patent of 1878. The vegetable oil gives the whiteness when the fluid is mixed with water: the product otherwise would be brown. A mixture of caustic soda and potash is also used, as an easier-mixing product is obtained. Naphthalin in cresol and other coal-tar bases for disinfectants is the most frequent cause of their insolubility. A good way to get rid of it is to allow the saponified cresol to stand for about three months, during which the naphthalin crystallises out, and the fluid should be decanted from it.

II

No. 1. *Tincture of Soap-bark*

Ground quillaia-bark	1 oz.
Spirit	10 oz.

No. 2. *Prepared Coal-tar*

Heat 1 lb. of coal-tar in a shallow dish at 120° F. for an hour, stirring.

No. 3. *Solution of Prepared Coal-tar*

Tincture of soap-bark	20 oz.
Prepared coal-tar	4 oz.

Digest for two days at 120° F., cool, decant, and filter.

No. 4. *Precipitated Resin*

Resin	900 grains
Caustic soda	150 grains
Distilled water	10 oz.

Boil gently for two hours, cool, separate the precipitate, squeeze it, and then dry it on a water-bath.

The Disinfecting-fluid

Solution of prepared coal-tar	4 oz.
Precipitated resin	2 oz.
Spirit	20 oz.

Digest at 120° F. for two days.

This is a surgical antiseptic.

The following recipes are for Perfumed Carbolic Acids, such as are used in deodorising sick-rooms :—

I

Carbolic-acid crystals	ʒij.
Rectified spirit	ʒij.
Oil of bergamot	ɱxx.
Oil of eucalyptus	ɱxx.
Oil of citronella	ɱvj.

Dissolve and add

Tincture of cudbear	ɱxx.
Water to	ʒxx.

Set aside for a few days and filter through fullers' earth.

II

Carbolic acid	ʒj.
Eau de Cologne	ʒj.
Dilute acetic acid	ʒxviij.

Keep in a cool place several days, and filter.

[This is specially intended for disinfection by dropping on a hot plate. May be called 'Carbolised Toilet-vinegar.']

Although the antiseptic power of carbolic acid is much decreased when it is combined with alkalies, there are many 'soluble' disinfectants of this class which are popular. Phénol Sodique, a French dental antiseptic, is one of them. It is sometimes called Soda Phénique, and the official name of it is Solution de Phenate de Soude. The formula is: Crystallised carbolic acid, 7 grams ; solution of soda (s.g. 1·332), 10 grams ; water to 100 c.c. Dissolve. For a mouth-wash, 1 part of this solution is dissolved in 30 parts of water.

According to Mr. G. M. Beringer, a proprietary phénol sodique popular in the United States differs from the foregoing in containing but a small proportion of phenol and much tarry matter. It is a thin, dark-coloured, almost black liquid, and may be made as follows :—

Coal-tar	ʒij. (troy)
Caustic soda	ʒij.
Water to	ʒxvj.

Dissolve the soda in 4 oz. of water ; warm, add the coal-tar, and agitate thoroughly for a few minutes. Add the rest of the water, and set aside in a warm place for seven days, agitating frequently. Decant the aqueous solution, filter it through a moistened filter, washing the residue with sufficient water to make up to 16 oz.

By the addition of soap to such solutions a larger amount of cresols and phenols can be worked into them, and a fluid obtained which mixes with water to form an emulsion.

One of the best starting-points for the preparation of such soluble fluids is the 'creosote' obtained from blast-

furnaces, which is rich in cresols and contains comparatively little phenols. The proportions used are :—Creosote 30 parts, soft soap 10 parts, and solution of soda (10 per cent.) 30 parts. For creosote, coal-tar oil boiling between 170° C. and 230° C. may be used. The ingredients are to be boiled together for an hour, then set aside to settle, when the dark fluid is drained from any oily portion floating upon the top. It is preferable to form soap in the mixing thus :—

Boil together 1 gal. of crude carbolic acid (or 'oils' if cheapness is required), palm oil 1 lb., soda ash 3 lbs., and water 2 gals. for two hours, replacing water so as to maintain a volume of at least 2½ gals. Set aside for several days and decant the clear brown syrupy fluid.

Such solutions become milky when mixed with water, but when alcohol instead of water is used to dissolve the alkali water-soluble solutions are the result. These are only available for surgical purposes owing to their cost. Eucalyptus oil and similar essential oils may be added to these disinfectants with benefit so far as odour is concerned. Resin oil may be used instead of palm oil with advantage, as the resin soap is a much better emulsifier.

Izal is not related to carbolic acid, although obtained from coal. The substance from which it is obtained is a brown oil (s.g. 1·055), one of several products yielded in coking coal. This oil on fractionation furnishes certain oxidised compounds, amongst them a thickish amber-coloured oil containing the hydroxyl group. This is izal oil. It is perfectly free from carbolic and cresylic acids, and in the pure state has no irritating action upon the skin. For disinfecting-purposes the oil is made into a 30-per-cent. emulsion with gelatin and water.

Various phenoloid bodies are obtained from blast-furnace gases, much of the 'creosote oils' of commerce being of this origin, and attempts have been made to displace carbolic acid by them, without, however, much success. It may be said, generally, regarding this subject that the popularity of carbolic acid, and of half-a-dozen other disinfectants, is so great that it is only by the expenditure of much money in advertising that any new disinfectant can get a foothold. Every year a large

number of disinfectants are patented, and the fact that the variety of the retailer's stock of this class of goods changes but little is the best evidence of the fate which meets most of them. We indicate briefly the composition of some other disinfectants which are or have been popular.

Aminol (Woolheim's patent, No. 16242, 1888).—Essentially a mixture of methylamines obtained by distilling herring brine with lime.

Artmann's Creolin. — According to the patent (1889) tar-oil freed from carbolic acid is sulphonated and extracted with water. The milky liquid is separated into two layers by means of hydrochloric acid or salt, the upper layer being separated for use.

Blast-furnace Disinfectant. Patented by A. H. Allen and R. Angus in 1887. Consists in submitting neosote (the mixture of tar acids and oxyphenols from coke-ovens) to the action of caustic-soda solution.

Borol. — Bauer and Gyiketta (1891) prepare this by melting together 136 parts of potassium bisulphate and 62 parts of boric acid. Use in solution or as a powder diluted with common salt or Glauber's salt.

Borosulphates and Borophosphates which possess high antiseptic and preservative properties are prepared, according to Wendler's patent (10933 of 1897), by heating the sulphate or phosphate with boric acid.

Bromidine (Borland's patent, No. 6191, 1886). – A mixture of bromide and bromate of sodium (prepared by saturating bromine with soda) and sodium acid sulphite in molecular proportions.

Bromonaphthalene Candles. The compound in these on burning gives free bromine. The active agent is obtained by the action of bromine on naphthalene. Chloronaphthalene is similarly prepared. Besides candles a soap and resin-soap solution were made. Patented by the late Dr. Alder Wright, 1893, No. 4950. Candles containing iodoform and other decomposable iodine compounds have also been introduced.

The following Disinfecting-candles are also patented:—A. E. Webb (1873): Add chloride of iodine or carbolic acid to the material of which candles or night-lights are made. Reissig (1874): Add sulphur to candle-wax. Dr. A. Wright (1884): Add 5 to 10 per cent. of eucalyptus oil to the material for making candles. Moody and Streathfield (1889): 1 to 2 per cent. of iodoform, bromo-naphthalene, or chloro-napthalene to medicate candles or lamp-oil.

Burnett's Solution.—Patented by Sir W. Burnett in 1838. Strength, 1 lb. of zinc chloride to 5 gals. of water, for preserving wood; but the fluid sold for disinfecting-purposes has a specific gravity of 2·000, which is equal to about 80 per cent. of the chloride, and appears to be made by allowing the solid chloride to deliquesce.

Campho-phénique.—A compound (claimed not to be a mixture) of 505 parts of absolute phenol and 495 of camphor, the ingredients being combined as vapours.

Carbolic Vapouriser. — C. Lowe, of Manchester, in 1884 patented a mixture of 40–75 parts of pure carbolic acid with 60–25 parts of infusorial earth.

Chloralum.—Patented in 1870 by the late Professor Gamgee, and consisting of a solution of impure aluminium chloride, substantially 2 lbs. of the chloride to 1 gal. of water.

Chlorophenols. —According to Hargreaves' patent these are prepared by blowing chlorine through phenols; heat is evolved, the temperature being kept down to between 100° and 180° F. The chlorophenols formed are absorbed by lime, sawdust, salt, &c., to make a disinfectant.

Chinosol was patented by Fritzsche & Co. (1409 of 1896), and is prepared by adding one molecular proportion of dry potassium pyrosulphate to a solution of oxyquinoline in alcohol and boiling the mixture in a reflux condenser for ten hours. The crystals that form are separated, dried, and powdered.

Condy's Fluids contain (*green*) manganate and (*red*) permanganates of alkalies and other salts, the nature of which does not appear to have been accurately determined. Liq. potass. permang., B.P., is an imitation of the red fluid.

Bollmann Condy's Purifier (patented in 1876) is prepared by dissolving 200 lbs. of crude sodium manganate in 100 gals. of cold water, and adding sulphuric acid to convert into permanganate. The solution after three or four days is evaporated to 25 gals. and poured on to 18 cwt. of dried salt, and crystallised. In 1884 Mr. Condy patented a solution of aluminium permanganate.

Cooper's Disinfectant (patented in 1887) was prepared by mixing anhydrous calcium chloride 34 parts, sodium chloride 64 parts, and to each ton adding camphor 2½ lbs.

Cresol Solution.—Von Heyden in 1890 patented a process for making soluble cresols, &c., by mixing cresols or other phenol derivatives with sodium salicylate or caustic soda. The resulting solution does not separate on dilution with water.

Crimson Salt.—Patented by Tweedie and Hartin in 1884. A mixture of potash alum 8 parts, common salt 6 parts, borax 1 part, and potassium permanganate 1 part.

Crookes' Disinfectant (1871).—Made by mixing together sulphurous and carbolic or cresylic acids.

Disinfecting-tablets. —Black and Renoldson patented a process in 1889 by which mercuric chloride is diluted with sodium sulphate and mixed with a mineral acid, eucalyptus oil, and indigo in such proportions that a tablet of the dimensions of 1 cubic inch made a quart of strong disinfecting-fluid.

Dupré and Hake's (Patent 4283, 1887).—A mixture of sodium manganate (2) with powdered kieserite (1), or with sulphate of lime, sulphate of zinc, or boric acid.

Endemann's Disinfectant. Prepared by mixing 300 gals. of heavy tar oil and 100 gals. of light tar oil, dissolving 200 lbs. of oleic soap in 100 gals., adding the rest of the tar oil and 435 lbs. of potash solution (caustic potash 6 parts, water 46 parts).

Eucalyptus Disinfecting-powder.—Borax 1 lb., ground gypsum 5 lbs., eucalyptus oil 2 oz.

Fournier's Disinfectant is a mixture of formaldehyde 3 parts, alcohol 1 part, acetone 1 part (Patent No. 1723 of 1898).

Jeyes' Disinfectant.—The patent of 1877 directs 100 lbs. of creosot or naphthalene and 100 lbs. of resin to be melted together, and 5 gals. of caustic-soda solution (30° B.) added. The 1878 patent is an improvement on this, and consists in liquefying 85 parts of

resin, adding 100 parts of coal-tar distillates (sp. gr. not exceeding 1·00), well mixing, and adding 60 parts of caustic soda (30° B.) and 20 parts of vegetable oil. In 1884 the formula given was heavy tar oil 16 parts, cocoanut oil 32 parts, and caustic-soda solution 16 parts, and the solubility is increased by adding sodium sulphate and carbonate and resin.

Kresolsulphon. — The patent of G. Kraemer (1892) directs that phenyl xylolethane be sulphonated and converted into the calcium salt. This, again, is converted into the sodium salt, and the solution mixed with cresol.

Lauraline. — Naphthalene scented with camphor and eucalyptus oil, and moulded into cakes.

Little's Disinfectant.—Prepared by pouring a concentrated solution of caustic potash into rosin oil (patent of 1884).

Lysol or Lysoline. — Patented by W. Dammann in 1890. Tar oil is boiled with a fatty acid or resin acid, an alkali, and some alcohol, in a reflux condenser, till completely saponified.

Ozonin.—Patented by L. Schreiner in 1889. Is prepared by mixing hydrogen peroxide and oil of turpentine with a solution of resin soap.

Ree's Disinfecting-fluid (Patent No. 1738, 1893).—A mixture of bleaching-powder 28 lbs., camphor 14 lbs., and black tar varnish 50 gals. Allow to stand eight days, and use the fluid as a paint for urinals.

Salufer.—Mr. W. Thompson, of Manchester, in 1886 introduced sodium silicofluoride in cubes under this name.

Sauridon.—A Dorset shale is distilled. The residue is powdered, and with the powder is mixed a proportion of the fractional distillate, which appears to be of cresylic nature.

Stevenson's Disinfectant, patented n 1885, consisted of a mixture of 1 part of sodium manganate, and 4 or 5 parts of acid sodium sulphate.

Terebene.—Introduced by Dr. Francis T. Bond, and presumably made in the old-fashioned way—viz., treating oil of turpentine with 5 per cent. of strong sulphuric acid, exposing for several days, then washing with water.

Thiocamf.—A liquid formed by the action of sulphur dioxide on camphor, suggested by Professor Emerson Reynolds for giving off sulphurous acid spontaneously. Contains about 32 per cent. SO_2 (Patent 15676 of 1888).

Tilden's Disinfectant consists of calcium chloride 8 parts, magnesium bromide 1 part, mixed with aluminium sulphate (patent of 1871).

Traumatol, an iodo derivative of cresol patented by Kraus and Chevrier (5288 of 1894), is prepared by the action of iodine upon cresol or any cresylate. It is in the form of a reddish-purple coloured powder.

Tuson's Disinfectants. — The late Professor R. V. Tuson in 1879 prepared a disinfectant by passing sulphurous acid into carbolic acid. In 1887 he took out two patents: one (No. 451) was for a mixture of sodium bisulphite with calcium and zinc sulphates; the other (No. 12222) was a solution of 3 lbs. of zinc chloride and 2 oz. of corrosive sublimate in ½ gal. of water, and saturated solution of sulphurous acid added to make 1 gal.

Urinal-cakes.—(1) Naphthalene fused and cast in suitable moulds. (2) Fused calcium chloride. (3) A mixture of equal parts alum, copper, iron, and zinc sulphate, and resin fused and moulded.

(4) Boric and salicylic acid of each 10, potassium permanganate 40; powder and make into a cake with soluble glass 40 parts.

Weaver's Periodates. — A solution of calcium iodate. Was strongly recommended by Dr. Klein in 1887. See *C. & D.*, XXIV., 573.

Zinc Sulphite. — Boake and Roberts in 1886 patented the use of acid sulphite of zinc in solution or in dry form, mixed with anhydrous acid sulphate of sodium.

It will be seen from some of the foregoing that metallic chlorides and sulphates are used as disinfectants. They are not without value, but at the best it does not amount to much. For some suggestive analyses of coal-tar disinfectants by Juritz, see the *C. & D.*, 1899, I., 167.

Sulphur Candles are made by fusing sulphur, pouring it into moulds, and placing a wick in the centre of the mass, or adding a cone of sulphur and nitre or similar substance. The wicks and cones do not ignite freely without the addition of nitre, a chlorate, or something similar, and such additions are covered by existing patents. The following are the patents in connection with these candles :—

Morss and Bourne (18434, 1891).—The surface of the candle is undermined so that the flame will attack and ignite the sulphur quickly.

Kingzett (11807, 1893).—The blocks of sulphur are provided with a wick impregnated with sulphur or a fuse of sulphur and some oxidising-agent, such as potassium chlorate. The sulphur candle is provided with an outer vessel of water.

Kingzett (14903, 1893).—A strip of openwork fabric dipped in melted sulphur is partly embedded in the top of the block of sulphur, or the whole candle may be composed of strips of material coated with sulphur and made up in a suitable form.

Wade (18511, 1898). — The candles are encased with asbestos or other porous material which soaks up water from a dish in which the candle is placed. Corrugated-cotton wicks impregnated with potassium chlorate or nitrate are embedded in the sulphur.

HORTICULTURAL AND AGRICULTURAL PREPARATIONS

Summary.—Introductory Remarks — Insecticides — Wheat-dressings — Weed-killers — Grafting-waxes — Fertilisers — Cattle and Dairy Preparations and Medicines — Sheep-dips — Cage-bird and Poultry Specialities.

THIS chapter covers a branch of trade which has double importance to chemists. In the first place it is profitable, and can be cultivated wholly by country chemists and partly by town chemists ; and, in the second place, many of the articles called for are scheduled poisons, the retail sale of which is restricted by law in the United Kingdom to chemists, unless they contain arsenic, tobacco, or tobacco alkaloids. The Poisons and Pharmacy Act, 1908, permits licensed persons as well as registered chemists and druggists in Great Britain and Ireland to sell by retail poisonous substances to be used exclusively in agriculture or horticulture for the destruction of insects, fungi, or bacteria, or as sheep-dips or weed-killers, which are poisonous by reason of their containing arsenic, tobacco, or the alkaloids of tobacco, if the person so selling or keeping open shop is duly licensed for the purpose by a local authority, and conforms to the regulations as to the keeping, transporting, and selling of poisons.

One effect of this enactment is that greater attention is now paid to this department of business by retail chemists, whose knowledge of botany and chemistry enables them to specialise in the manufacture and sale of all kinds of chemical preparations used as

INSECTICIDES

In the Appendix notes on garden pests are printed with references to the remedies for which formulas are given in this

chapter. The numbers in parentheses following the titles are those mentioned in the Appendix. The quantities in the formulas are for Imperial weights and measures.

Arsenical Preparations

Calcium-arsenite Solutions (38)

(Taft's formula)

White arsenic . . .	℥iv.
Lime	℥viij.
Water	℥lxiv.

Boil for forty minutes, and when required for use dilute with water, to 60 gals. for the codlin moth and to 30 gals. for potatoes.

(Kedzie's formula)

White arsenic . . .	℥iv.
Sodium carbonate . .	℥xvj.
Soft water . . .	℥lxiv.

Boil for fifteen minutes, then add ½ lb. of lime previously slacked. For use take 16 oz. of this stock solution to 7 gals. of water.

Lead Arsenate (39)

	A	B	C	D	E	F
Sodium arsenate oz.	4	1	1	1	1	3½
Lead acetate . oz.	12	3	3	3	3	7
Treacle lbs.	2	1	2	2	—	—
Soft soap lbs.	—	—	—	2	—	—
Soft water gals.	100	10	32	16	10	10

Dissolve the chemicals separately and mix in dilute solution, adding the treacle last.

Suitable for spray for caterpillars on gooseberry and currant bushes, for the caterpillars of the codlin moth, for fruit-trees attacked by the tent caterpillar, and to poison the foliage on which caterpillars feed.

F is for biting-mouthed insects, caterpillars, and beetles.

Paris Green Mixture (40)

Paris green . . .	℥j.
Crude petroleum . .	℥j.
Slaked lime . . .	℥iv.

Mix the Paris green and the oil, add the lime, and for use dilute with 8 gals. of water.

A useful insecticide for caterpillars, &c., and said not to injure the foliage.

Carbolic Wash or Emulsion (41)

Carbolic acid . . .	1 gal.
Soft soap . . .	3 lbs.
Water	50 gals.

Used as a spray for apple-suckers, celery-fly, cabbage-root fly, and onion maggot.

Caustic-alkali Wash (42)

Caustic soda . . .	℥xvj.
Potassium carbonate .	℥xvj.
Soft soap . . .	℥viij.
Soft water . . .	10 gals.

Dissolve the salts in separate quantities of water, mix, and add the soap.

The soft soap makes the wash adhere more easily to the tree. Useful as a winter wash for destroying hibernating insects by removing loose bark, lichens, and mosses; winter wash for currant bushes and fruit-trees. Spray in the middle of February.

Copper-sulphate Solutions (43)

1 lb. in 25 gals. Used in winter to drench vine-soil and greenhouse walls in cases of white rot.

1 lb. in 20 gals. For immersing seed-wheat to prevent bunt.

1 lb. in 15 gals. To spray house infected with fungoid disease.

1 lb. in 2½ gals. for destroying charlock. Use 40 gals. per acre.

1 lb. in 1 gal. Used to spray bushes affected with American mildew

previous to destroying them by fire. Also used for steeping seed as a preventive against smut in barley, this quantity being sufficient to treat four bushels of seed. Copper-sulphate solutions are best for steeping wheat grain, but formalin solution is best for barley.

Copper Sulphate with Ammonia (44)
(Eau Celeste modified)

Copper sulphate . .	℥xvj.
Strong sol. ammonia .	℥xij.
Washing soda . .	℥xx.
Water to make . .	10 gals.

Dissolve the copper sulphate in 2 gals. of water, add the ammonia, and dilute to 10 gals. Then add the soda and stir till dissolved. Effective as a spray for dormant trees. Apt to injure foliage of growing plants.

Millardet Mixture (*Modified*) (45)

Copper sulphate . .	℥xix.
Quicklime . . .	℥xvj.
Treacle (or cheap sugar) .	℥xvj.
Water	10 gals.

Slake the lime, mix with hot water, and add the treacle (or sugar), heating, if possible, to promote combination. This is added to the copper sulphate dissolved in the bulk of the water. The treacle makes the wash adhere better. Very effective as a spray to prevent potato-disease. A solution half the strength without the treacle is used for spraying apple and pear trees against scab. Perret's solution and Cucasa are similar preparations, the latter being a soluble saccharate of lime and copper.

Cupram (46)

Copper carbonate .. .	℥j.
Strong sol. of ammonia .	℥x.
Water	10 gals.

Make a solution.

Particularly suited to fruit-trees and work under glass.

Bordeaux wash (formula 13) is used as a spray in potato-disease and as a preventive measure against American gooseberry mildew; spray in spring from a fortnight to three weeks before the young leaves appear.

Copper Sulphate with Sodium Carbonate (47)

	A	B	C	D
Copper sulphate oz.	20	6	4	5
Sodium carbonate . . oz.	8	8	6	6½
Water . gals.	10	10	10	10

The ingredients are separately dissolved and mixed in dilute solution.

'A' is known as Perdeux mixture. Used as Bordeaux wash or where lime is not procurable. Will often prove useful for small growers and for garden purposes as spray for potato-disease.

Copper-acetate Solution (48)

Normal copper acetate	℥ij. to ℥iv.
Water	10 gals.

A valuable non-staining fungicide.

Formaldehyde Solutions (49)

	A	B
Formaldehyde . . oz.	10	6
Water . . gals.	10	10

Formula 'A' is used for steeping barley, but 1 of formalin to 240 parts of water is preferable, steeping the seed for ten minutes.

'B' is used for immersing seed oats to prevent smut, and seed wheat to prevent bunt. Immerse for ten minutes and dry. Also for potato-scab, soaking the potatoes in the solution for two hours, and for soaking cabbage-seeds to prevent transmission of black rot.

Hellebore Insecticides (50)

Hellebore powder . .	℥xvj.
Water	4 gals.
Hellebore powder . .	℥j.
Flour . . .	℥ij.
Water	3 gals.

Hellebore may be applied dry, alone or mixed with flour, when plants are moist with dew, or as a spray. The first formula is used for caterpillars of the large larch sawfly, and the second for gooseberry caterpillars, currant sawfly caterpillars, and slug-worms on fruit-trees.

Iron-sulphate Sprays (51)

		A	B
Iron sulphate . .	lb.	1½	1
Soft water . .	gal.	1	1

Formula 'A' is used for destroying charlock, at the rate of 40 gals. per acre. 'B' is applied with a brush in the white stage of the apple-canker fungus.

Acid Iron-sulphate Sprays (52)

		A	B
Iron sulphate . .	lbs.	5½	½
Sulphuric acid .	oz.	1½	½
Hot water . .	gal.	1	1

Dissolve the sulphate in the water, and add the acid.

Apply 'A' to dormant wood by means of a swab of rags to prevent anthracnose of grapes. Use 'B' for spraying trees affected with brown-rot fungus; also for drenching ground beneath the trees.

Mercuric Chloride (53)

	A	B
Mercuric chloride .	1	1
Water . . .	1,000	2,000

Use 'A' for soaking cabbage-seed to prevent black-rot, and for disinfecting knives used for cutting out blighted wood; and 'B' for potato-scab, soaking the potatoes in the solution for 1½ hour.

Kerosene or Paraffin Emulsions

There is a large variety of formulas, and only a selection need be given in addition to those on p. 417.

Paraffin Emulsions with Soap (54)

	A	B	C	D
Paraffin	40 oz.	4 oz.	60 oz.	16 oz.
Soft soap	6 lbs.	1 oz.	8 oz.	1 oz.
Boiling water	1 gal.	1 gal.	1 gal.	1 gal.

A, C, and D require to be diluted before use, generally in the proportion of about 1 of paraffin to 30 of finished spray. Used for weevils, apple suckers, aphides, larch canker, celery fly, onion fly, &c.

Paraffin Emulsion with Potassium Sulphide (55)

Paraffin emulsion with soap (1 in 15) . .	2½ gals.
Potassium sulphide .	1 oz.

Used for spraying for red spider on hops, currant, and gooseberry foliage.

Paraffin lime Emulsion (56)

	A	B	C
Lime	8 lbs.	4 oz.	4 oz.
Paraffin	1½ gal.	20 oz.	100 oz.
Iron sulphate	—	8 oz.	8 oz.
Caustic soda	—	—	2 lbs.
Water to	10 gals.	10 gals.	10 gals.

'C' is the *Woburn Wash*, new formula.

These washes are used to destroy red spider, woolly aphis, hibernating caterpillars, brown scale of gooseberry and currant, &c.

Miscible Paraffin Oils (57)

These are prepared from soap solution, and paraffin or petroleum oils. The soap solution may or may not contain carbolic acid, and may be made thus:—

Menhaden oil . .	8 gals.
Carbolic acid . .	6 gals.
Caustic potash . .	15 lbs.

Heat in an iron vessel to 290° or 300° F., and add all at once kero-

sene 1½ gal., and as soon as the temperature falls below 212° F. add water 1⅓ gal., and stir well.

Soluble Oil

Heavy paraffin oil	40	parts
Rosin oil	6	,,
Soap solution	3⅔	,,
And if necessary to prevent separation,		
Water	1	part

For use on fruit-trees take soluble oil 1 part, water to make 15 to 25 parts.

Pyrethrum Wash (58)

	A	B
Insect-powder	½ oz.	½ oz.
Soft soap	½ oz.	—
Water	160 oz.	64 oz.

Mix twenty-four hours before use, or boil five or ten minutes. Spray for leaf-destroying thrips.

Quassia Sprays (59)

	A	B	C
Quassia	10 oz.	12 oz.	2 or 3 lbs.
Soft soap	½–1 lb.	¾–1 lb.	½–1 lb.
Water	10 gals.	10 gals.	10 gals.

The quassia may be soaked in cold water for twenty-four hours, or may be boiled. Invaluable for green-fly on roses, black-fly on cherry, for aphis on apples and hops. The quassia spray may also be mixed with tobacco-juice or the nicotine fluid No. 26.

Soap Washes (60)

	A	B
Soft soap	1 lb.	½ lb.
Soft water	10 gals.	1 gal.

The stronger spray is used to kill aphides, the soap blocking up the breathing pores, and the weaker for pear-slug, green-fly, &c.

Sulphur Washes (61)

Sulphur	3 lbs.
Lime	3 lbs.
Water	6 gals.

Boil till reduced to 2 gals., and for use dilute with 100 parts of water. Excellent for plant-mites, such as red spider, &c.

Lime, Sulphur, and Salt Washes (62)

		A	B	C	D
Lime	lbs.	2	1½	1¾	2
Sulphur	lb.	1½	1½	1¾	1¾
Salt	lb.	1	1½	1¾	1
Water	gals.	4	4	4	4

Boil the lime and sulphur together in a little of the water, and when combined add the rest of the water and the salt. Effective as a winter application for scale.

Sulphur and Lime Powder (63)

Sulphur	2 parts
Lime	1 part

Used in black-currant gall mite and for grape mildew.

Potassium Sulphide (64)

		A	B	C	D
Potassium sulphide	oz.	1	1	1	1
Water	gals.	1	1½	2½	3

The weaker solutions are used for spraying leaves affected with surface mildew; the stronger for preventing or checking attacks of American gooseberry mildew; also used against red spider.

Most of the following formulas were given in the eighth edition of this work. Numerical references have been added :—

Board of Agriculture Remedies

1. The extract of 10 lbs. of quassia, obtained by boiling the quassia in 100 gals. of water, and 7 lbs. of soft soap.

2. The extract of 5 lbs. of quassia in 100 gals. of water, with 6 lbs. of soft soap and 4 pints of paraffin, well stirred.

3. The extract of 5 lbs. of

quassia in 100 gals. of water, with 6 lbs. of soft soap and 4 pints of Calvert's carbolic acid No. 5.

4. 8 lbs. of soft soap and 2 lbs. of finely ground hellebore, and a quart of paraffin, boiled and well stirred in 100 gals. of water.

5. Paris green or London purple 1 lb. to 150 gals. of water.

These are used with hand or machine syringes for small apple-trees, plum and damson trees, and for filbert and cob-nut trees.

Caustic Wash for Fruit-trees

Dissolve 1 lb. each of caustic soda and pearlash in water, add ¾ lb. of soft soap, and make up to 10 gals. with water. Spray all over the trees, especially where there is any moss, lichen, or decaying bark.

Kills woolly aphis, codlin-maggot, scale insects, and eggs of the red spider and apple-sucker.

This wash is recommended by the Board of Agriculture and Fisheries.

Snuffs (Duty-free) (6)

Tobacco manufacturers are allowed to supply the following free from duty:—

Blight-powder for Hops

Finely powdered tobacco	75 parts
Sulphur	28 parts
Asafetida	5 parts
Sago-flour	3 parts

Mix.

Hop-wash Liquid (7)

Made by infusing 10 lbs. of extract of logwood with each 100 lbs. of dry tobacco.

Horticultural Fumigants (8)

Snuff	100 lbs.
Powdered hellebore	10 lbs.
Saltpetre	18 lbs.
Asafetida	6 lbs.
Cayenne	4 lbs.
Lampblack	2 lbs.
Sago-flour	10 lbs.

Mix.

Any of these may be used for making sheep-dip should the sulphate of copper, &c., in duty-free tobacco-juice be incompatible with other ingredients of the dip.

Alum-and-Pyrethrum Wash (9)

Used by means of a water-can to destroy cabbage-worms.

Alum	2 oz.
Pyrethrum	1½ oz.
Water	10 gals.

Dissolve the alum in the water, and mix the powdered insect-flowers with a little of the solution gradually to make a thick cream, and add to the rest.

Arsenate-of-lead Wash (10)

Used as a general wash for fruit-trees.

A

Sodium arsenate	1 oz.
Water	8 gals.

Dissolve.

B

Lead acetate	3 oz.
Water	8 gals.

Dissolve.

C

Soft soap	2 lbs.
Boiling water	½ gal.
Paraffin	1 pint

Emulsify.

Add B to A, and add 2 pints of the resulting mixture to C.

Paris Green Wash (11)

Paris green	1 lb.
Lime	2 lbs.
Water	160–200 gals.

Mix. Keep well stirred while spraying.

London Purple Wash

is made in the same proportions.

Poisoned Bran Mash (12)

(For Trapping Insects)

Wheat-bran	40 lbs.
Molasses	½ gal.
London purple	1 lb.

Water to make a thick mash.

A heaped tablespoonful of the mash is placed near infested plants.

Slices of raw potato steeped in solution of arsenic are used for a similar purpose.

Bordeaux Wash (13)

(*Bouillie Bordelaise; Millardet Mixture*)

This was first proposed by Millardet in 1883 as a fungicide to combat the grape-mildew, which threatened entirely to destroy the vineyards of France. The mixture fortunately answered the expectation of its inventor. It is used in this country as a spray for blight on potatoes.

I

Copper sulphate	6 lbs.
Quicklime	4 lbs.
Water	25 gals.

Dissolve the sulphate in half the water. Slake the lime and make a milk of it, adding the sulphate solution.

II

Copper sulphate	6 lbs.
Quicklime	4 lbs.
Water	50 gals.

Mix as above.

The dilute solution II. answers as well as the stronger I.

The addition of 2 lbs. of molasses, or 1 to 2 lbs. of soft soap, is sometimes made to increase the adhesiveness of Bordeaux mixture.

Eau Céleste (14)

Used in place of Bordeaux wash, but is said to burn the foliage. It was proposed by Prof. Audoynaud, of Montpellier, in 1885, the following being his formula:—

Copper sulphate	1 kilo.
Ammonia solution	1 litre
Water to	100 litres

Mix.

Cavazza's Wash (15)

Copper sulphate	72 grams
Lime-water	10 litres

Mix.

Johnson's Wash (16)

Copper sulphate	8 oz.
Ammonium carbonate	1 lb.

Dissolve separately, mix, and dilute to 25 gals.

David's Powder (17)

(*Dried Bordeaux Mixture*)

Copper sulphate	4 lbs.
Quicklime	16 lbs.

Dissolve the copper sulphate in as little water as possible; use the solution for slaking the lime, and dry.

Podechard's Powder (18)

is a similar preparation containing, in addition, sulphur and wood ashes.

Cornell's Wash (19)

is prepared by mixing equal parts of Bordeaux mixture, kerosene emulsion, and an arsenical compound.

Fungicide for Turnips (20)

Sulphate of iron (crude)	2 lbs.
Sand	1 lb.

Mix.

This is similar to a much-advertised preparation for 'finger-and-toe' in turnips.

Green-copperas Wash (21)

To 100 parts of a saturated solution of iron sulphate in water add 1 part of sulphuric acid.

Used against anthracnose of the grape, applied by means of a swab to the dormant vine.

A similar mixture is known as Skawinski's Solution.

Carbon Bisulphide

Used against insects affecting stored corn. The store is made as airtight as possible, and 1 lb. of carbon bisulphide is allowed for every 1,000 cubic feet of space. Leave the vapour in contact for from twenty-four to thirty-six hours.

Cotton wool saturated with carbon bisulphide is effectual in driving away ants, rats, and moles if introduced into their runs.

Remember that carbon bisulphide forms an explosive mixture with three times its volume of oxygen—*i.e.*, 15 volumes of air.

Chester's Formalin-Glycerine Wash (22)

Formalin (40 per cent.)	1 pint
Glycerine	2 pints
Water	17 pints

Mix.

Used for pear-tree canker.

Hydrocyanic-acid Fumigation (23)

This method of destroying insect-pests is coming into use. It is very effectual, but the considerable element of danger in using it makes it desirable that a chemist should superintend the process. The gas is prepared by using—

Potassium cyanide	1 oz.
Sulphuric acid	1 oz.
Water	3 oz.

Mix the acid and water, and add the potassium cyanide.

The amount of gas formed from the above quantities is sufficient for a confined space of 150 cubic feet. Another authority uses the following proportions:—

Potassium cyanide	2 oz.
Sulphuric acid	3 oz.
Water	4½ oz.

Mix.

He obtains the quantity to use by multiplying the grains of cyanide required by the cubic feet of space and dividing by 28·35 to reduce to ounces. Quantities needed are thus given:—

	Per cub. ft.
Well-matured and dormant nursery stock	0·25 gram
Orchard-trees, outdoor	0·2 gram
Greenhouses	0·15 gram
Ferns	0·075 gram
Coleus	0·10 gram
Violets	0·15 gram
Roses	0·075 gram
Carnations	0·10 gram
Grapes	0·09 gram

For trees the time allowed is thirty to forty-five minutes, for grapes the fumigation is effected overnight, and for the other cases given above fifteen minutes is sufficient.

Tents are erected over the trees, the cubic contents being reckoned from the height and width of the tent. The fumigation is best done in the evening, and the trees should not be drenching wet.

Hydrocyanic acid is evolved as soon as the cyanide reaches the acid, hence it is desirable to delay the evolution slightly by wrapping the cyanide in paper; this allows time for closing the door of the tent. In the case of grain warehouses or rooms mechanical devices are adopted for lowering the cyanide into the acid.

Hydrocyanic-acid fumigation is the most effectual means of ridding a room of bugs, and in cases where this remedy is used, the windows should be arranged so that they can

be opened from the outside. This allows the rooms to be ventilated before being entered.

Kerosene Emulsions (24)

I. Hilgard's

Kerosene	1 gal.
Whale-oil soap	4 oz.
Water	½ gal.

Make into an emulsion by means of a force-pump and dilute to 100 gals. before use.

Used for scale and red spider.

II. Hubbard-Riley's

Hard soap	½ lb.
Boiling water	1 gal.
Kerosene	2 gals.

Emulsify as above.

The emulsion is diluted with four to fifteen times its bulk of water before use.

Used against scale insects, especially in hop-growing districts.

III

Paraffin oil	2 gals.
Common soap	½ lb.
Boiling water	1 gal.

Dissolve the soap in the water, and add to the oil. Mix with a mechanical mixer thoroughly. On cooling this forms a jelly, 1 part of which is to be mixed with 10 parts of water for syringing fruit-trees.

(For Collinge's Spray *see* Supplementary Chapter.)

Mercuric-chloride Paint (25)

Corrosive sublimate	1 oz.
Soft soap	8 lbs.
Methylated spirit	1 pint
Water sufficient to make a stiff paste.	

The mercuric chloride is first dissolved in the spirit and then incorporated with the soft soap.

This paint is used upon the bases of apple-trees to prevent the entrance of borers.

Nicotine Fluid (26)

I

Tobacco-juice	Oij.
Solution of subacetate of lead	℥j.

Mix, shake, and set aside overnight to deposit. Decant the clear solution, filter the sediment, and add solution of sodium phosphate to precipitate any excess of lead. Filter and mix with the following solution:—

Soft soap	℥vj.
Camphor	℥iij.
Oil of rosemary	℥ij.
Spirit to	Oij.

Mix, and after a day filter.

A teacupful of the fluid to a pailful of water for syringing the plants. The fluid may also be used by vaporising in the greenhouse.

II

Nicotine	5 drops
Water	1 gal.

Shake well.

To be used for syringing garden or greenhouse plants. This is excellent for rose-trees.

III

Crude nicotine	½ oz.
Camphor	2 dr.
Proof spirit to	6 oz.

Dissolve.

Use like No. 1.

Nicotine Wash
(Sargeant)

Nicotine	2
Methylated spirit	5
Soft soap	8
Infusion of quassia to	100

Dilute with forty times its volume of water to make a wash.

Nicotine Fumigator
(Sargeant)

Nicotine	30
Camphor	5
Naphthalene	5
Oil of camphor	25
Oil of citronella	25
Methylated spirit to	100

Use half an ounce for each 1,000 cubic feet of greenhouse space.

Potassium-sulphide Wash (27)

Potassium sulphide	½ oz.
Hot water	1 gal.

Dissolve.

When cold, use as a spray to prevent gooseberry-mildew and similar diseases.

Sodium hyposulphite, ½–1 oz. to 10 gals. of water, is used for a similar purpose.

Pyrethrum Wash (28)

Insect-powder	1 oz.
Water	3 gals.

Allow to stand for a day, or if for immediate use employ hot water.

Hellebore Wash, used for currant-worm, is made of the same strength.

Quassia Washes (29)

I

Quassia chips	4 oz.
Water	1 gal.

Boil for fifteen minutes, strain, and add—

Soft soap	4 oz.

Used for destroying plant-lice.

II

Extract of quassia	lb. j.
Soft soap	lb. vij.

Mix thoroughly.

One pound to be dissolved in 30 gals. of water and used as a wash.

III. Whitehead's Remedy

Soft soap	lb. vij.
Quassia	lb. vj.
Water	Cong. c.

Macerate overnight.

Resin Soap and Wash (30)

Resin	2 lbs.
Caustic soda	1 lb.
Tallow	1 lb.

Dissolve the caustic soda in 1½ gal. of water, add the resin and tallow, and heat the mixture to effect combination. Dilute to about 40 gals. with water for use as a spray against summer insects.

Fish-oil is sometimes used in place of the tallow.

Fish-oil Soap (31)

Caustic potash	1 lb.
Fish-oil	3 pints
Water	3 gals.

Mix.

1 pint of this to 8 gals. of water is used for plant-lice and similar insects.

Carbolic-soap Wash (32)

(For White Grubs or Maggots in Cabbages)

Hard soap	1 lb.
Soft soap	2 lbs.
Boiling water	1 gal.
Crude carbolic acid	1 pint

Mix.

A little of this wash is poured round the roots of each plant.

Soap-and-Tobacco Wash (33)

Soft soap	1 lb.
Hot water	2 gals.
Tobacco-juice	1 pint

Mix.

Used this strength for dormant wood, or for growing tissues diluted with twice its bulk of water.

Eau Grison (34)

Flowers of sulphur	3 lbs.
Quicklime	3 lbs.
Water	6 gals.

Boil till reduced to 2 gals. Dilute 1 part of the finished liquid with 100 parts of water for use.

To combat mildew on plants.

Moth and Caterpillar Lime (35)

(For Grease Bands)

Resin	36 oz.
Rape oil	36 oz.
Venice turpentine	20 oz.
Wood tar	5 oz.
Oil of turpentine	3 oz.

Mix by heating and stirring.

To be used for coating strips of paper to form grease bands round fruit-trees about 3 feet above the ground.

Terebene Washes (36)

(For Green Fly)

I

Bond's terebene	ʒij.
Spirit of tar	ʒss.
Soft soap	ʒiv.
Methylated spirit	ʒvj.

Dissolve.

Directions.—Half a teacupful of the solution to be added to a pailful of water, and the mixture used for syringing garden or greenhouse plants.

II

Bond's terebene	ʒij.
Soft soap	ʒiv.
Spirit	ʒvj.

Dissolve.

Mix 1 to 4 oz. of this solution with a gallon of water, and use as a wash or spray.

Worms on Bowling-greens.

Water with lime-water, or put into every 10 gals. of water a teacupful of this solution: Mercuric chloride 1 lb., hydrochloric acid 22 oz., water to 1 gal.

Grafting-waxes for Trees

I

Yellow resin	ʒviij.
Lard	ʒiij.
Red ochre	ʒiv.

Melt the resin, and while hot add the lard to it; then stir in the ochre, and pour the mixture on a stone slab.

II

Pitch	ʒiv.
Resin	ʒiv.
Lard	ʒij.
Beeswax	ʒij.

Melt together by a gentle heat.

III

Beeswax	75 parts
Resin	125 parts
Turpentine	400 parts
Rape oil	12 parts
Venice turpentine	25 parts
Zinc-white	25 parts

Turmeric a sufficiency to colour.

IV

Japan wax	1 parts
Beeswax	3 parts
Resin	8 parts
Turpentine	4 parts
Hard paraffin	1 part
Suet	3 parts
Pine resin	6 parts

V

Resin	100 parts
Beeswax	36 parts
Turpentine	50 parts
Linseed oil	12 parts
Lard	6 parts
Turmeric	2 parts

Wheat-dressings (37)

(i.) Copper sulphate, 1 lb. (ii.) Copper and iron sulphates, of each ½ lb. (iii.) Corrosive sublimate, 3 dr. (iv.) Formalin, 1 oz. (v.) Soda crystals, ½ lb.; arsenic, 2 dr.

Directions in each case: Dissolve the material in 1½ gal. of water, and use to dress 6 bushels of wheat.

vi. Strawson's

Copperas, bluestone, and arsenic, of each . .	7 lbs.
Crude carbolic acid . .	8 oz.

Mix.

WEED-KILLERS

I

Arsenious acid, 3 lbs.; common spirit of salt, 1 gal.; water, 1 gal. Boil in an enamelled iron pan until dissolved, make up to 4 gals. with water, and colour with aniline-blue 6 gr.

II

Arsenious acid, 4 lbs.; 70-per-cent. caustic soda, 4 lbs.; water, 4 gals. Boil until solution is effected, and colour with sulphate-of-copper solution.

III. Non-scheduled

1. Spirit of salt, 2 parts; water, 3 parts. 2. Sat. sol. of acid potassium sulphate. 3. Copper sulphate, 1; water, 9.

Directions.—A pint of any one of these to a pailful of water.

The following are brief abstracts of expired weed-killer patents:

IV

A mixture of arsenic, copper sulphate, caustic soda, and yellow ochre (No. 17994 of 1893).

V

Arsenic	3 oz.
Sulphate of copper . .	1 oz.
Caustic soda . . .	1 oz.
Saltpetre	½ oz.
Sulphur	½ oz.
Sal ammoniac . . .	½ oz.

Mix.

Of this 5 to 10 lbs. to 30 gals. of water is used according to the nature of the weeds (No. 12964 of 1888).

VI

A mixture of charcoal and sulphur (No. 12227 of 1890).

VII

A mixture of Jarrow alkali, lime, salt, and caustic soda (No. 13372 of 1895).

Powder Weed-killer

White arsenic . . .	1 lb.
Caustic soda in powder .	½ lb.
Dried sodium carbonate .	½ lb.
Prussian blue . . .	1 dr.

Mix.

FERTILISERS

It is useful to note that the appearance of plants shows when they require certain constituents, and the points are here briefly indicated:—

Nitrogen.—When plants want nitrogen the leaves are said to lose their normal green colour and take on a clear green or a yellowish one, and to dry finally with a clear brownish-yellow colour. Plants can only make use of nitrogen in the form of a nitrate; hence, for a quick-acting nitrogenous manure, nitrate of soda or nitrate of lime is recommended. The ammonia compounds, however, are quickly broken down and converted into nitrates by the action of soil bacteria, and so ammonia fertilisers are much valued.

Phosphoric Acid.—When phosphoric acid is deficient, the leaves take on a deep clear green, almost blue green. With a greater scarcity there appear on the leaves, first at the margin, and later on the whole leaf, dark spots, and the leaf dries with a dark-brown to a black-green colour.

Phosphates tend to produce root development at the beginning, and favour the ripening process at the end, of the plant's life.

Potash.—A scarcity of potash is said to be coincident with spotted leaves, the spots appearing in the margin, and later becoming distributed over the whole leaf, the stalk, midrib, and veins retaining their green colour. The leaf also curves or curls, with its convex side upwards, and finally dries up. Potash tends to prolong the life of the plant, and is therefore more likely to be effective on light soils, where the conditions tend to shorten it, than on heavy soils, where the existing tendency is to prolong growth.

I

Ammonium sulphate	1 lb.
Potassium nitrate	½ lb.
Sugar	¼ lb.

Dissolve a teaspoonful in each gallon of the water used.

II

Ammonium sulphate	2 lbs.
Potassium nitrate	1 lb.
Chalk	½ lb.
Sodium chloride	½ lb.
Superphosphate of lime	½ lb.
Sulphate of iron	2 oz.

To be sprinkled freely on the mould used in transplanting.

III

Sodium chloride	2 lbs.
Potassium nitrate	1 lb.
Magnesium sulphate	1 lb.
Sodium phosphate	4 lbs.

One teaspoonful to be dissolved in a quart of water, and the plants sprinkled daily with the solution. The same directions apply to all that follow.

IV

Ammonium nitrate	4 lbs.
Ammonium phosphate	2 lbs.
Potassium nitrate	2½ lbs.
Ammonium chloride	8 oz.
Calcium sulphate	10 oz.
Ferrous sulphate	4 lbs.

V

Ammonium sulphate	2 lbs.
Sodium chloride	2 lbs.
Potassium nitrate	1 lb.
Magnesium sulphate	1 lb.
Magnesium carbonate	4 oz.
Sodium phosphate	4 lbs.

VI

Ammonium nitrate	4 lbs.
Ammonium phosphate	5 lbs.
Potassium nitrate	9 lbs.

VII

Potassium nitrate	4 lbs.
Potassium phosphate	5 lbs.
Ammonium sulphate	2 lbs.
Ammonium nitrate	7 lbs.

This is used especially to improve the growth of the leaves; if it is desired to increase the flowers, the ammonium nitrate must be omitted.

VIII

Ammonium sulphate	2 lbs.
Sodium chloride	2 lbs.
Potassium nitrate	1 lb.
Magnesium sulphate	1 lb.
Magnesium phosphate	4 oz.
Sodium phosphate	6 oz.

IX

Potassium chlorate	1 lb.
Calcium nitrate	4½ lbs.
Magnesium sulphate	12½ oz.
Potassium phosphate	14 oz.
Ferrous phosphate (freshly precipitated)	5 oz.

X

Ammonium phosphate	6 lbs.
Sodium nitrate	5 lbs.
Potassium nitrate	5 lbs.
Ammonium sulphate	4 lbs.

The plants to be sprayed with the solution once a week.

XI

Calcium nitrate	10 lbs.
Potassium chlorate	3 lbs.
Potassium phosphate	3 lbs.
Magnesium sulphate	2 lbs.
Ferrous sulphate	½ oz.

XII. For Tomatoes

Ammonium sulphate	9 lbs.
Ferrous sulphate	1 lb.

CATTLE, DAIRY, AND FARM REQUISITES

Calf-meal or Milk Substitute

I

Crushed linseed	7 lbs.
Barley meal	14 lbs.
Wheat meal	14 lbs.

II

Linseed cake meal	14 parts
Ground linseed	5 parts
Wheaten flour	2 parts
Locust bean meal	2 parts

To be scalded at the rate of 3 lbs. of the meal with 5 quarts of boiling water; add a little salt.

Cattle-condiment

Table-salt	8 lbs.
Barley meal	8 lbs.
Ground rice	4 lbs.
Pea meal	4 lbs.
Linseed meal	4 lbs.
Powdered gentian	1 lb.
Powdered fennel	1 lb.
Powdered fenugreek	1 lb.

A few tablespoonfuls with each morning and evening feed.

Cattle Condition-powder

Magnes. sulphat.	℥xiij.
Pulv. anisi	℥j.
Pulv. zingiberis	℥j.
Pulv. gentianæ	℥j.

Cattle Food and Spices

I

Ground locust beans, 50; linseed cake, 50; coarsely ground liquorice, 5; gentian, 1; fenugreek, 3; and cummin, 1.

II

Aniseed, allspice, cummin, ginger, liquorice, turmeric of each equal parts.

III

Fenugreek, 500; juniper-berries, 100; fennel-seed, 80; linseed, 150; sodium bicarbonate, 100; gentian, 100; ginger, 100; common salt, 50; sodium sulphate, 100; asafetida, 5 parts. Mix and sift.

IV

Ground linseed cake	1 cwt.
Locust meal	56 lbs.
Bran	40 lbs.
Common salt	2 lbs.
Sulphate of iron	1 lb.
Black-pepper gruffs	2 lbs.
Fenugreek	2 lbs.

Mix thoroughly.

A tablespoonful is the dose.

Cow-powders

Pulv. catechu	℥j.
Pulv. zingiberis	℥ss.
Pulv. gentianæ	℥ss.
Pulv. opii	gr. x.

Fiat pulv. pro dose.

Diapente

Gentian	℥iv.
Turmeric	℥iv.
Fenugreek	℥iv.
Ginger	℥iv.
Anise	℥iss.
Cloves	℥iss.
Caraway	℥iss.

Distemper-powder

Potass. nitrat.	℥iv.
Antim. nig.	℥ij.
Sulphur.	℥j.
Pulv. fœniculi	℥j.

Ten to thirty grains for a dose, according to the size of the dog.

Garget Ointment

Ung. camphoræ	℥j.
Ung. hydrargyri	℥j.
Ung. petrolei vet.	℥vj.

Directions.—Gently rub or work the ointment over the udders for five minutes, after which the udders should be wiped carefully with a soft and clean rag.

Hay-spice

Linseed-cake meal . .	lb. j.
Powdered fenugreek .	lb. j.
Common salt . . .	℥vj.
Powdered anise . .	℥iv.
Powdered ginger . .	℥iij.
Powdered coriander .	℥iij.

Mix.

Butter and Cheese Colouring

I

Best roll annatto . .	℥xvj.
Potassium carbonate .	℥viij.
Water	Cong. j.

Cut the annatto into small pieces, add the potassium carbonate, and allow to soak in the water for an hour or two; then boil until the whole of the annatto is apparently dissolved. Set aside to cool, add 2 oz. of borax, and strain.

A teaspoonful of this is added to each 10 gals. of milk in cheese-making.

The solution can also be used for colouring butter, but is now superseded by the following:—

II

Oil-soluble aniline orange	℥j.
Olive or nut oil . .	Cong. j.

Dissolve the colour in the oil by gentle warming.

A teaspoonful of the colouring is sufficient for 10 gals. of cream. The quantity may be varied as desired.

III

Ethereal extract of annatto	℥j.
Olive oil . . .	Oj.

Dissolve.

Instead of the ethereal extract a resin prepared as follows may be used:—Exhaust annatto with warm spirit by double maceration; evaporate the liquors to dryness and extract the colouring resin from the residue with sodium-carbonate solution (1 in 10); strain and precipitate the resin with dilute sulphuric acid, collect on a filter, wash it well with warm water, and dry. The product is not so strong as the ethereal extract, and ℥j. to ℥ij. of it must be used for a pint of oil.

Butter-powder

Sodium bicarbonate .	4 lbs.
Chloride of sodium . .	1 lb.
Aniline orange . .	10 gr.

Triturate the colouring with the salt, mix with the bicarbonate, and sift.

Bicarbonate of sodium alone and uncoloured is also sold for butter-powder; also a mixture of cream of tartar and bicarbonate of sodium, equal parts.

Butter Essence or Flavour

The active constituents of this are butyric ether, myristic acid, and coumarin (trace) in glycerine.

Purifying Rancid Butter

The processes in use for this purpose consist in melting the butter at a low temperature with powdered animal charcoal and prepared chalk, stirring well, allowing the extraneous substances to settle, pouring off the melted butter, and straining if necessary. Churning with milk and the addition of butter essence is necessary when the flavour of the butter has been affected.

Mithridate for Cattle Drinks

P. bacc. lauri . . .	℥j.
P. pip. long. . . .	℥ij.
P. sem. carui . . .	℥ss.
P. sem. anisi . . .	℥ss.
P. rad. gentian. . .	℥ij.
P. rad. curcum. . .	℥ij.
P. rad. valerian. . .	℥j.
P. rad. zingib. . .	℥j.
P. gum. acaciæ . .	℥ij.
Boli . . .	q.s. ad color.

Condition-powders for Horses

I

Nitre	ʒiv.
Sulphur	ʒiv.
Powdered gentian	ʒj.
Powdered fenugreek	ʒij.
Powdered liquorice	ʒiv.

II

Pulv. cinchonæ	ʒj.
Sulphuris sublim.	ʒij.
Sodii sulphatis	ʒiv.
Potassii nitratis	ʒij.
Pulv. gentianæ	ʒiv.
Pulv. fœnugræci	ʒij.
Pulv. glycyrrhizæ	ʒiv.

III. Prize Medal

Pulv. gentianæ	ʒiv.
Pulv. potassii nitratis	ʒj.
Sulphuris subl.	ʒiv.
Pulv. zingiberis	ʒiv.
Antimon. nig.	ʒiv.

A tablespoonful for a dose.

Blistering-ointments

I

Pulv. cantharid.	ʒxv.
Pulv. euphorbii	ʒv.
Ol. olivæ comm.	ʒxx.
Ol. terebinth.	ʒxij.

Digest for twenty-four hours, then add—

Ceresini	ʒxx.
Resin. flav.	ʒv.

melted by the heat of a water-bath, and stirred until creamy.

II

Pulv. cantharidis	ʒxx.
Ol. terebinth.	ʒxij.
Acid. acet. fort.	ʒix.
Lanolini	lb. iiss.
Vaselini	lb. iiss.

Mix the first three, and allow to stand for twenty-four hours; then add the lanoline and vaseline, melted on a water-bath, and mix well, stirring until cold.

Directions.—Spread the ointment upon a linen cloth and apply to the affected part, allowing it to remain on all night; then dress with hog's lard.

Blistering-tinctures

I

Cantharides, powd.	ʒiss.
Camphor	ʒj.
Cochineal	gr. x.
Spirit	a sufficiency

Macerate the solids in ʒvij. of spirit for a week, strain, press, and filter, washing the marc with more spirit to make ʒviij.

II

Cantharides	ʒiij.
Euphorbium resin	ʒiss.
Amyl acetate	ʒx.
Spirit to	ʒxx.

Macerate for four days, filter, and wash the marc with spirit to 1 pint.

Leeming's Essence

Cantharides	ʒviij.
Camphor	ʒij.
Euphorbium	ʒviij.
Oil of origanum	ʒj.
Castile soap	ʒiij.
Spirit	Ovj.

Digest for fourteen days and filter.

Cough-balls for Horses

Pulv. camphoræ	ʒss.
Pulv. antim. nig.	ʒss.
Pulv. scillæ	ʒss.
Pulv. digitalis	℈j.
Pulv. zingib.	ʒj.
Pulv. potassii nitratis	ʒij.
Mellis	q.s.

Make a ball.

One ball to be given morning and evening.

Diuretic Powder for Horses

Pulv. resinæ . . .	ʒiij.
Potassii nitratis . .	ʒiij.
Pulv. fol. buchu . .	ʒiss.

M. et div. in pulv. xij.

Each may be made into a ball with tragacanth paste.

Horse Physic-balls

I

Best Barbadoes aloes .	10 lbs.
Glycerine . . .	1 lb.
Castor oil . . .	1 lb.
Powdered unbleached ginger	½ lb.

Dissolve the aloes in the glycerine by means of a water-bath, then add the castor oil, and lastly stir in the ginger, previously sifted through a coarse sieve.

II

Aloes barbadensis .	lb. xiiiss.
Saponis communis .	lb. ivss.
Potassii carbonatis .	ʒxviij.
Olei anisi . . .	ʒvj.
Aquæ	ʒxx.

Cut the soap into small shreds and put into a pan with the water. Heat, and when thoroughly melted and quite smooth add the carbonate of potassium and the aloes. Let it simmer for some time, stirring frequently until the aloes is dissolved. If allowed to boil, the mass will come over before melted. Lastly add the oil of anise, and stir it well in.

A small piece of the mass taken out before the anise is added, and cooled on a slab, will tell whether the paste has been brought to a proper consistence or not. (ʒxij. = aloes ʒviij.)

Pig-powders

I

Flowers of sulphur . .	lb. xx.
Red ochre . . .	lb. iss.
Tartarated antimony .	ʒxij.

Mix. Weigh into powders containing ½ oz. each.

One powder to be given every few weeks.

II

Pulv. potassii nitrat. .	ʒviij.
Sulphur. sublim. . .	ʒviij.
Ferri oxid. rub. . .	ʒiv.
Pulv. curcumæ .	ʒviij.
Pulv. carui . . .	ʒij.
Pulv. fœnugræci . .	ʒx.

Dose: From a dessertspoonful to a tablespoonful.

Swine Diarrhœa-mixture

Tr. opii	ʒij.
Tr. valerian. ammon. .	ʒiij.
Inf. catechu . . .	ʒij.
Liq. calcis saccharat. .	ʒiv.
Decoct. quercûs ad . .	ʒvj.

Dose: ʒj. twice or three times a day.

Lambing-oils

Carbolic oil (1 in 40), coloured with alkanet or elder.

Fly-powder

Plumbi oxidi rub. . .	lb. ss.
Plumbi alb. . . .	lb. iss.
Pulv. umber. ang. . .	lb. ij.
Flor. sulph. . . .	lb. ij.
Pulv. helleb. alb. . .	lb. ij.
Ol. animalis . . .	ʒij.
Ol. picis	ʒij.

Send out in 1-lb. packets.

Directions for Use.—It should be applied when the dew is on the sheep, or otherwise moisten the fleece with a garden water-pot and rose. Part the wool down the back and elsewhere, if necessary, and apply the powder by means of a flour-dredger. The hand should be held over the sheep's eyes while the head is well sprinkled, as fly will strike where any sores are caused by fighting.

This packet is enough for twenty sheep.

Fly and Maggot Oils

I

Oil of turpentine	℥v.
Spirit of tar	℥v.
Corrosive sublimate	℥ss.
Hydrochloric acid	℥ss.
Buttermilk or water	Cong. ss.

II

The following is a modification of a formula suggested by Professor Robertson :—

Corrosive sublimate	℥j.
Methylated spirit	℥viij.
Spirit of tar	℥x.
Powdered quillaia	℥ij.
Water to	Cong. j.

Powder the corrosive sublimate, and shake with the methylated spirit until dissolved; then add the quillaia and a pint of water. Macerate overnight, and add the spirit of tar and the rest of the water; occasionally shake well for a day or two, and strain.

Directions.—To prevent the fly striking, and for maggots: Mix two tablespoonfuls with a winebottleful of cold water. To kill lice: Mix three tablespoonfuls with a winebottleful of cold water, and rub on with a brush. For mange: Mix four tablespoonfuls with a winebottleful of cold water, and well rub in the mixture with a brush every day until cured.

Foot-rot Paste

Cupri sulphat.	℥iv.
Zinci sulphat.	℥j.
Pulv. tragacanth. co.	℥j.
Acid. carbolic.	℥iij.
Mel. depurat.	℥ij.
Aquæ	q.s.

Foot-rot Powder

Camphor.	℥j.
Cupri acetat.	lb. j.

Powder and mix.

Directions.—To be applied to the affected parts, and smeared with veterinary vaseline.

Sheep-dips

Arsenic-and-Sulphur Dip

Arsenious acid	℥xij.
Dried sodium carbonate	℥xij.
Sulphur	℥iv.

For a shilling packet, to make 30 gals. of dip for as many sheep. Yellow arsenious sulphide may be used instead of white arsenic.

Carbolic-acid Dip

Soap	1 lb.
Crude carbolic acid	1 pint
Water	50 gals.

Dissolve the soap in a gallon or more of boiling water, add the acid, and stir thoroughly.

Carbolic-and-Glycerine Dip

Common size	1 lb.
Soft soap	1 lb.
Crude glycerine	1 lb.
Crude carbolic acid	1 lb.

Melt the size and soap together, and add the other ingredients. Mix well.

For 30 gals. of dip.

Dr. Kaiser's Carbolic Dip

Tobacco	13½ lbs.
Soda	8 lbs.
Freshly slaked lime	4 lbs.
Soft soap	8 lbs.
Crude carbolic acid (50-per-cent.)	4 lbs.
Water	66 gals.

Zundel's Carbolic Dip

Crude carbolic acid	3 lbs.
Caustic lime	2 lbs.
Potash	6 lbs.
Soft soap	6 lbs.
Water	70 gals.

Mix and boil.

Kerosine Emulsion Dip

Fresh-skimmed milk	1 gal.
Kerosene	2 gals.

Churn together till emulsified, or mix and put into the mixture a force-pump and direct the stream from the pump back into the mixture. The emulsification will take place much more rapidly if the milk be added while boiling hot. Use 1 gal. of this emulsion to each 10 gals. of water required.

Kerosene Soap Dip

Soap	1 lb.
Water	1 gal.
Kerosene	2 gals.

Bring the water to the boil and dissolve the soap in it; then add the kerosene, and churn until emulsified. Use 1 gal. of this emulsion to 8 gals. of water.

Tobacco Dip

I

Tobacco-juice	8 lbs.
Powdered hellebore	6 lbs.
Soft soap	4 lbs.
Arsenious acid	½ lb.

Mix.

Four pounds of this mixture treated with 30 gals. of water is sufficient for thirty sheep.

Duty-free tobacco-juice is obtainable. It is a mixture of 100 lbs. dry tobacco-leaf in the form of juice, 10 lbs. sulphate of copper, 15 lbs. common salt, and 2 lbs. oil of turpentine.

II

Unmanufactured tobacco	1 lb.
Potassium carbonate	1 lb.
Sulphur	1 lb.
Soft soap	1 lb.

Boil for an hour in a few gallons of water, and then make up to 20 to 40 gals., which is sufficient for about forty sheep or fifty lambs.

Texas Tobacco Dip

Tobacco	30 lbs.
Sulphur	7 lbs.
Concentrated lye	3 lbs.
Water	100 gals.

Steep the tobacco in three successive portions of water, expressing each time; then add the other ingredients to the liquor, and stir well while in use.

Law's Sheep-dip

Tobacco	16 lbs.
Oil of tar	3 pints
Soda ash	20 lbs.
Soft soap	4 lbs.
Water	50 gals.

Steep the tobacco as in the previous formula, and add the other ingredients to the liquor.

Special Scab-dips

A Departmental Committee appointed by the Board of Agriculture and Fisheries reported (1904) that lice, although harmful to the health of sheep, can be readily dealt with by any effective dip; the same may be said of ticks, keds, and sheep-scab. Maggots in sheep are best destroyed by carbolic dips, but sulphur is a perfect preventive. Professor Winter tried the effects of sixteen types of dip, the wool of the sheep being afterwards valued at the Bradford Conditioning House. The kinds of dip used were:—

1. Arsenic and washing-soda (2½ lbs. arsenic and 1¾ lb. washing-soda per 100 gals.).
2. Arsenic and caustic soda (½ lb. caustic soda in place of the washing-soda).

3. Arsenic, washing-soda, and sulphur (4 to 8 lbs. sulphur to No. 1).
4. Arsenic and sulphur (5 lbs. free sulphur per 100 gals.).
5. Sodium compounds of sulphur and free sulphur.
6. Calcium sulphide, as used in New Zealand: Sulphur 25 lbs., slaked lime 12½ lbs., water 100 gals.
7. Carbolic acid (1½ or ¾ gal. of carbolic and 5 lbs. of soft soap per 100 gals.).
8. Tar acid and arsenic (a mixture of Nos. 1 and 7).
9. Tar acid and other tar-products.
10. Pitch oil (with soft soap and whale oil).
11. Spirit of tar (1¼ per cent. of spirit of tar and ¼ per cent. of soap).
12. Tar acids and paraffin.
13. Tar acids 29, paraffin 36, lanoline 8, soft soap 17½, water 9½; 1 gal. to 100 gals. of water.
14. Tobacco and sulphur (35 lbs. of tobacco and 10 lbs. of sulphur in 100 gals.).
15. Tobacco, sulphur, and tar acid.
16. Tobacco and sulphur ('the characteristic principle of tobacco' mixed with soft soap and sulphur).

Nos. 1, 2, 3, 4, 5, 6, 7, 12, 13, 14, 15, and 16 were placed in the first class as regards efficiency, while Nos. 8 and 9 were classed second, Nos. 10 and 11 being placed in a third class. Authorities advocate the exclusive use of arsenic and sulphur dips.

The following three formulas were included in an Order made by the Board in 1905 as those which the Board have approved, the quantities being for 100 gals. of bath :—

Carbolic Acid and Soft Soap

Dissolve 5 lbs. of good soft soap, with gentle warming, in 3 quarts of liquid carbolic acid (containing not less than 97 per cent. of real tar acid). Mix the liquid with enough water to make 100 gals.

Lime and Sulphur

Mix 25 lbs. of flowers of sulphur with 12½ lbs. of good quicklime. Triturate the mixture with water until a smooth cream without lumps is obtained. Transfer this to a boiler capable of boiling 20 gals., bring the volume of the cream to 20 gals. by the addition of water; boil and stir during half an hour. The liquid should now be of a dark-red colour; if yellowish, continue the boiling until the dark-red colour is obtained, keeping the volume at 20 gals. After the liquid has cooled, decant it from any small quantity of insoluble residue, and make up the volume to 100 gals. with water.

Tobacco and Sulphur

Steep 35 lbs. of finely ground tobacco (offal tobacco) in 21 gals. of water for four days. Strain off the liquid and remove the last portion of the extract by pressing the residual tobacco. Mix the whole extract, and to it add 10 lbs. of flowers of sulphur. Stir the mixture well to secure an even admixture, and make up the total bulk to 100 gals. with water.

It is required that the period of immersion in these dips should not be less than half a minute.

CAGE-BIRDS AND POULTRY

Bird-food

Pea meal . .	℥xvj.
Coarse sugar . . .	℥viij.
Finely grated bread (stale)	℥viij.
Fresh butter . .	℥ij.
Yolks of eggs . . .	℥ij.

Mix these well together and brown gently in a frying-pan. When cold mix well with—

Poppy-seeds . . .	℥ij.
Bruised hempseed (separated from the husks) .	lb. ij.

Canary Colouring and Food

Canary-colourings are used as soon as the birds begin to feed themselves, or when they are moulting, as then the feathers are soft and take in the colouring easily. Tasteless or sweet cayenne is the best substance for this purpose, but turmeric, alkanet, saffron, beetroot, and aniline dyes are also used. The colouring is generally mixed with breadcrumb or biscuit, with or without sugar. As a supplementary food chopped eggs, marigold florets, and nasturtiums are sometimes given. Subjoined are formulas based on analyses of proprietary foods and colourings :—

I

Powdered sweet cayenne .	gr. ij.
Powdered turmeric . .	gr. ij.
Sugar	℥j.

Mix.

One or two teaspoonfuls with the food.

II

Powdered sweet cayenne.	℥ss.
Powdered turmeric . .	℥iij.
Peroxide of iron . .	℥j.
Sugar	℥j.

Mix.

Put a good pinch of this in the seed-box.

Mixed Seed

One part each of mustard and maw seeds, 4 parts each of hemp and rape, and 32 parts of canary-seed.

Red Mite in Canaries

To get rid of this parasite well dust the bird with insect-powder, especially under the wings, and as a further precaution paint the cage with ol. pini sylvestris, working it well into the cracks and crevices of the cage. A handkerchief or white cloth thrown over the cage every night will attract the insects after the cage has been painted. Remove the handkerchief in the morning and destroy the parasites. If the bird takes a bath, add a teaspoonful or so of infusion of quassia to the bath-water, or some of the Antiseptic Wash (p. 430).

Cage-birds' Tonic

I

Pulv. capsici . .	℈j.
Pulv. gentianæ . .	℥j.
Ferri peroxidi . .	℥ss.
Pulv. sacch. alb. . .	℥ss.
Theriacæ . . .	q.s. ut fiat massa

Put a piece the size of a pea into the cage daily.

II

For coughs, asthma, congestion of the lungs, &c., in all kinds of song-birds—a certain cure for soft moult.

Tr. ferri perchlor. . .	℥j.
Ac. hydrochlor. dil. .	℥ss.
Glycerini . . .	℥iss.
Aq. camph. ad . .	℥j.

Mix and colour with liq. cocci to a pale pink tint. Filter.

Dose : Three to six drops in the water.

Antiseptic Wash for Cage-birds

Chinosol F . . .	ʒij.
Sacchar. ust. . . .	ℳxx.
Aq. cinnamomi . .	ʒiv.
Aq. ad	ʒxx.

Mix, and when solution is complete filter.

Directions.—Add one or two teaspoonfuls to the bath-water, and allow the birds to use it, when it will quickly destroy all traces of parasites or germs in the feathers, so keeping the birds in a healthy and lively condition. For washing out the cages use a mixture of one tablespoonful in a pint of hot water.

Bird Tonic-powder

Tasteless capsicum . .	ʒviij.
Powdered fenugreek .	ʒj.
Wheaten flour . .	ʒvj.
Oleaceous butter-colouring	ʒj.

Mix well.

Dove's Food

Yellow and red small millet, greater millet (white), buckwheat, crushed wheat and maize, hemp, rice, and a few small peas. Millets constitute two-thirds of the mixture, and the rest are used in decreasing proportion.

Parrot's Food

A mixture of vegetable-marrow seed 45, sunflower-seed 35, safflower seed 10, millet-seed 5, buckwheat 3, ground-nut 2, and a dash of capsicum.

Tonic Pills for Pigeons

Ferri sulph. gran. . .	ʒj.
Pulv. capsici . . .	℈j.
Ext. nucis vom. . .	gr. vj.
Pulv. gentianæ . .	ʒss.
Glyc. tragacanth. . .	q.s.

Mix, and divide into sixty pills. Coat with sugar. Allow each pigeon six of these pills per day.

Egg-producing Spice

I

Sawdust	½ lb.
Red sanderswood . .	2 oz.
Fenugreek . . .	2 oz.
Capsicums . . .	2 oz.

Mix the powders.

II

Powdered liquorice . .	ʒvj.
Powdered gentian . .	ʒj.
Powdered capsicum .	ʒj.
Powdered fenugreek .	ʒj.
Black antimony . .	ʒij.

Mix.

III

Powdered cayenne . .	ʒij.
Hardwood sawdust (fine)	ʒiv.
Ground lentils . .	ʒiv.
Fine oatmeal . . .	ʒviij.

Mix.

IV

Powdered liquorice . .	ʒvj.
Powdered gentian . .	ʒj.
Powdered capsicum .	ʒj.
Powdered fenugreek .	ʒij.

Mix.

V

Pulv. capsici . . .	ʒvj.
Pulv. zingiberis . .	ʒj.
Pulv. pimentæ . .	ʒj.
Pulv. anisi . . .	ʒj.
Pulv. ferri sulphatis .	ʒj.
Pulv. glycyrrhizæ . .	ʒvj.

Misce bene.

VI

Pulv. curcumæ . .	ʒij.
Pulv. gentianæ . .	ʒij.
Pulv. sem. lini . .	ʒxij.

M.

VII

Fine bran . . .	ʒviij.
Ground rice . . .	ʒviij.
Sodium bicarbonate .	ʒij.
Powdered capsicum .	ʒss.
Calcium phosphate . .	ʒij.

Mix.

General Directions.—One tea-

spoonful for eight to ten full-grown fowls, and chickens proportionally, to be given three to five times a week with the morning meal.

Poultry-foods

I

Ground bones	4 oz.
Sulphate of iron	½ oz.
Powdered capsicum	½ oz.
Powdered fenugreek	2 oz.
Powdered black pepper	1 oz.
Sulphate of sodium	1 oz.
Silver sand	2 oz.
Ground dog-biscuits	8 oz.

Mix.

II

Beef (lean, dried and ground)	20 oz.
Linseed cake	25 oz.
Indian corn	20 oz.
Indian corn (slightly browned with lard)	2 oz.
Ground oyster-shells	10 oz.
Chalk	6 oz.
Magnesia	2 oz.
Silver sand	2 oz.
Ground bones	3 oz.
Mustard bran	3 oz.
Capsicums	2 oz.
Common salt	2 oz.
Sulphate of iron	1 oz.
Carbonate of sodium	1 oz.
Sulphur	1 oz.

Mix.

A heaped teaspoonful of either of these is to be mixed with the food for twenty fowls.

Poultry Restoration Tonic

Ferri sulphatis	℥v.
Acid. sulphurici dil.	℥iiss.
Sacchari usti	℥iss.
Aquam ad	Cong. j.

Mix the acid with half the water and dissolve the sulphate in it. Mix the caramel with the rest of the water and add to the sulphate solution. Set aside for a night and decant next morning.

An excellent tonic for chickens during the moulting period and in the winter season. Mix a teaspoonful of it with two quarts of water in the fowls' drinking-trough. Renew it every other morning.

Fowl-pills

Reviver

Pulv. capsici	℥j.
Pulv. gentianæ	℥iij.
Ext. glycyrrh.	q.s. ut ft. massa

Tonic

Ferri sulphatis	℥ij.
Ext. gentianæ	℥ss.
Calcii phosphatis	℥j.
Glycerin. tragac.	ut ft. massa

Divide into 5-grain pills in each case.

Roup-pills for Poultry

Hydrarg. subchlor.	gr. j.
Pulv. antimonialis	gr. j.
Pulv. glycyrrhiz.	gr. j.
Copaibæ	q.s.

Ft. pil.

A pill to be given night and morning.

Roup-powder

Chlorate of potassium	℥j.
Powdered cubebs	℥j.
Powdered anise	℥ss.
Powdered liquorice	℥iss.

Mix.

Directions.—Mix a teaspoonful of the powder with the food for twenty fowls.

Gapes in Pheasants

Sulphate of iron	℥j.
Capsicum	℥ss.
Fenugreek	℥j.
Red sanderswood	℥j.
Liquorice	℥ij.
Treacle	a sufficiency

Mix the powders, and make into a soft pill-mass with the treacle.

WRITING-MATERIALS

Summary.—Inks of the Past—Chemistry of Inks—Writing-ink from Galls—Vanadium Ink—Logwood Writing-ink—Copying-inks—Graphs and Graph-inks—Ink Powders and Tablets—Coloured Writing-inks—Marking-inks—Marking-ink Pencils—Invisible and Evanescent Inks—Stamp-inks—Typewriting-ribbon Inks—Horticultural Ink.

A POPULAR lecturer has lamented the decay of penmanship. This, he says, is the age of the typewriter and the shorthand clerk. With them individuality goes out, the soul of correspondence dies. The sentiment is pessimistic, and were it ours this chapter would not be written, for from first to last it treats of ink—especially writing-ink.

Inks are of great antiquity, as anyone familiar with the Scriptures may conjecture. The prophet Jeremiah tells us 'I wrote . . . with ink in a book,' and Ezekiel refers to 'a writer's inkhorn.' There is little doubt that the first black inks were mixtures of pigments with water and a glutinous material. The Egyptians used inks of this character, the black basis being some form of carbon, such as lampblack, that of the red being cinnabar. Their pens were pieces of reed, cut to suitable points. The Chinese have for thousands of years used ink which is a hard paste, consisting of the carbon from camphor-smoke mixed with glutinous material, now familiarly known as Chinese ink or Indian ink.

Pliny's account of atramentum, the ink of the Greeks and Romans, leaves little doubt that it was lampblack, and *atramentum indicum* was Chinese ink. A native atramentum was used by the Greeks which was yellow in colour but appears

to have contained an iron salt, for before use as a writing-material it was mixed with an astringent substance, so that the principle upon which modern inks are compounded is also old. From an analysis of Roman ink made as recently as 1901 by M. Leidie, and communicated to the Paris Society of Pharmacy, the observation that lampblack was the principal ingredient was confirmed, but this specimen (found in the ruins of a Roman villa) also contained iron, copper, and other metals in combination. There is no question that it is to the use of pigment-inks that we owe the preservation of ancient and even mediæval writings, for the monks used nothing else in inscribing on vellum. As recently in the world's history as 1831, the French Academy of Sciences recommended writings of permanent value to be done with inks containing lampblack. One was a mixture of 4 to 5 grams of Chinese ink in a litre of dilute hydrochloric acid (sp. gr. 1·010), and another contained the same proportion of Chinese ink with manganese acetate and acetic acid. The writing was 'fixed' by exposure to ammonia-vapour. These old pigment-inks have never become extinct, and cannot, because they are the most permanent. Modern inks are really a concession to the needs of the moment, and a menace to permanency, as those who have exposed their examination-certificates to daylight can testify. The advent of the quill and, later, of the metal pen required the ink to be ready for use, and the pigment preparation was unsuitable. Hence arose the fluid ink, presumed to be a solution, but in reality a suspension of extremely minute particles of a metallic combination with an organic body, such as iron tannate, the ancient gum medium being retained as the suspending-agent.

Galls and logwood are the principal sources of the colour-bases of writing-inks. Black inks and blue-black inks are made from the former, and those chameleon-tinted fluids which range in colour from bright red to violet, and dry more or less black, owe their peculiarities to the colouring principle of logwood. It is a necessary characteristic of writing-inks that they should possess a certain indefinable degree of

fluidity; they should be so dark as to be readily seen when written on official blue paper; they should dry with fair rapidity, or blot without being obliterated, and should darken rather than fade with age. There is no kind of ink which fulfils all these requirements equally. Logwood inks have the advantage in immediate conspicuousness, but they are very prone to lose fluidity and to fade with age. On the other hand, the fluidity of gall inks can be admirably and unalterably adjusted, and writing done with them, although it may fade, can be restored after generations of exposure; but such inks of themselves lack colour, and require the addition of something to give temporary colour.

The properties here referred to are appreciated when we examine the chemistry of inks. First, in regard to those made from galls. Here we are dealing with an ink-basis which contains tannic acid and very little gallic acid. These acids in themselves are colourless, but have the property of combining with ferrous salts to form colourless ferrous compounds which on exposure to the air gradually acquire an intense black colour. This change may be partly effected in the ink itself, as in the old-fashioned black writing-ink, which, owing to exposure in bulk, contains the colouring element as a ferroso-ferric gallo-tannate, or, as in blue-black ink, we may have an almost pure ferrous gallo-tannate in semi-solution with the addition of the blue colouring principle of indigo or of aniline blue. The iron is an essential constituent of these inks, and remains on the paper after the organic matter has faded through years of exposure.

Most logwood inks are simply dyes, and are not in metallic combination. It is the hæmatoxylin of the logwood, rather than the tannin, which is utilised by the ink-maker. By the addition of oxidising agents, such as potassium chromate, the hæmatoxylin is changed to the more powerfully colouring body hæmatein, whereby the brilliance of these fluids is secured. The so-called aniline inks are solutions of synthetic dyes. They require little skill in compounding, are very pretty, and somewhat evanescent.

WRITING-INKS FROM GALLS

The Common or Turkey Gall is the kind most used in ink-manufacture. Many qualities of galls are obtainable, but they may conveniently be grouped under the commercial terms 'blue,' 'green,' and 'white.' Their value is in the order given. There are also galls having a similar appearance, such as those from Corea, but their value is much lower. A poor gall means a poor ink. Therefore, use only the better qualities, which can be fairly well judged from the Mincing Lane prices. The shillings of cost per cwt. form a good index to the tannin percentage of the galls. For example, a blue gall at 70*s.* per cwt., a green at 60*s.*, and a white at 50*s.* may yield 70, 60, and 50 per cent. of tannin (gallo-tannic acid)—seldom so much, perhaps; still, relatively, the monetary value and the tannin value are on a par. The best Turkey galls rarely contain more than 70 per cent. of tannin.

Chinese Galls are also used in ink-making. Many consider them to be far superior to the Turkey sort. Chinese galls are derived from a species of *Rhus*, and appear in curious forms, some resembling a short locust bean, twisted and coming to a point where the gall had been attached to the leaf-stalk of the tree. Besides this shape there are many forms up to the egg-like gall, which predominates. Externally these galls are grey in colour, but when broken we find the horny substance to be reddish brown. They are very rich in gallo-tannic acid, 70 per cent. being a common content. Chinese galls require to be treated differently from the Turkey galls. While the latter galls contain an amount of extractive and mucilaginous matter, which some consider objectionable, they have a natural 'ferment,' which induces in watery decoctions of the galls that change of the tannic acid to gallic acid which is so desirable in making ink. Chinese galls do not contain this enzyme, so that if they be used in any of the recipes wherein Aleppo galls are indicated a teaspoonful of yeast must be added to every gallon of decoction, and fermentation be allowed to proceed for twenty-four hours before adding the

iron salt, &c., or they can be treated in the manner described in a succeeding page.

Other tannin materials are also used in the manufacture of inks, especially myrabolans.

The aim of the ink-maker is to extract from the galls as much of the tannin principle as possible, and to add sulphate of iron in sufficient quantity to combine with this principle. Rule of thumb is often the guiding factor in this, but it is possible to observe more precise rules in the art. These have been well expressed by Dr. Inglis Clark in a graduating thesis of which an abstract was published in *The Chemist and Druggist* of July 30, 1892. From that we quote the following passages as being an admirable exposition of many of the difficulties which are met with :—

> Towards the beginning of the nineteenth century a Dr. Lewis made some attempts to place the manufacture of ink on a satisfactory basis, and he succeeded so far as to determine that an excess of iron salt in the ink is detrimental to its permanence, such ink becoming brown on exposure. Three parts of galls to 1 part of ferrous sulphate were the proportions which he fixed upon as the best. He did not use boiling water in extracting the galls, and this has to be taken into account, for cold water would not, as he used it, extract more than half of the gallo-tannic acid from the galls. Dr. Lewis was the first to introduce logwood as a tinctorial agent, and he made the interesting and important observation that acetic acid in the menstruum provides an ink of greater body and blackness than sulphuric acid does—a circumstance due to the smaller resistance of acetic acid to the formation of iron gallo-tannate. In 1798 Ribancourt determined that an excess of galls is quite as injurious to the permanence of ink as an excess of iron. Dr. Bostock communicated a paper to the Society of Arts in 1830, in the course of which he stated that the tannin, mucilage, and extractive matter are, 'without doubt, the principal causes of the difficulty which is encountered in the formation of a perfect and durable ink. For a good ink the essential ingredients are gallic acid and a sesqui-salt of iron.' In this point Dr. Bostock peculiarly hit the mark. Owing to his working with galls he was unable to make decisive experiments ; but he concludes, and that rightly, that in proportion as ink consists merely of gallate of iron it is less liable to decomposition and any kind of metamorphosis.

Dr. Clark's own investigation showed that for a blue-black ink gallic acid alone gives, with sulphate of iron, a richer ink than one of tannic acid and the sulphate, and this is corroborated by the popularity of Stephens's blue-black ink, which is supposed to be made from gallic acid. The best propor-

tions, he found, are 150 parts of sulphate of iron and 100 parts of gallic acid. It is advisable, however, not to discard tannin altogether, owing to the slow blackening of the gallic-acid ink, and a little tannin gives initial blackening and body, while it is absolutely necessary for copying-ink. Initial blackness can also be ensured by oxidising 21 per cent. of the sulphate of iron, without adding extra acid.

These considerations in regard to the relative merits of gallic and tannic acids do not apply to the common black gall ink, in which we have the acids combined with iron in a more or less oxidised state. Blue-black ink was originally coloured with indigo-blue, and although this is now almost replaced by aniline-blue (which is equally effective, and exerts no disturbing influence upon the gall compound), some hints in regard to the indigo-blue will not be out of place. Apart from the mere colour which the indigo imparts, it has been assumed that the indigo-paste used keeps the iron gallo-tannate in solution. Any virtue of this kind which indigo-paste possesses is more likely due to the sulphuric acid which it contains than to the indigo itself. The essential part of the paste required is the sulpho-indigotate of sodium, now commonly called indigo-carmine. The commercial paste contains varying proportions of free sulphuric acid, and it is necessary in ink-manufacture that only the minimum of this constituent should be admitted. Paste containing 1 per cent. or less of free sulphuric acid has been found by experience to be most suitable for the purpose. An excess of acid in the ink corrodes pens, delays the darkening of writing, and sometimes perforates the paper. Apart from these objections, up to a certain point sulphuric acid is advantageous to the ink, and just the opposite after that point. The worst feature about indigo-coloured ink is that the colour gradually fades to a pale green.

Gall infusion prepared with hot water is not suitable for a blue-black ink, but a cold-water infusion is. In the latter case a comparatively small percentage of tannin is extracted from the galls, while much is extracted with hot water, and the consequence is that on adding the indigo-blue the

colour of the latter is not brought out as it should be. Substantially the same thing occurs in ink made with gallic and tannic acids (although the blue colour remains for a considerable time unimpaired in a tannin ink), and it appears to be due to the fact that ferrous tannate reduces indigo-blue to indigo-white—a change which the low reducing-power of ferrous gallate does little to effect. The vegetable matter present in common inks facilitates the alteration and precipitation of the indigo.

We have now reached a point at which the application of the principles here described may be noted, and there is no better example than the well-known Edinburgh Formula, which was published in *The Chemist and Druggist* many years ago. It is as follows :—

Blue-black Ink

Blue Aleppo galls (free from insect-perforation)	℥ivss.
Bruised cloves . .	℥j.
Cold water . . .	Oij.
Purified sulphate of iron .	℥iss.
Pure sulphuric acid .	♏xxxv
Indigo-paste (neutral or nearly so) . . .	℥j.

Place the galls, when bruised, with the cloves in a 50-oz. bottle, pour upon them the water, and digest, with daily stirring, for a fortnight. Then filter through paper into another 50-oz. bottle. Get out, also, the refuse of the galls and wring out of it the remaining liquor through a strong clean linen or cotton cloth into the filter, in order that as little as possible be lost. Next put in the iron, dissolve completely, and filter through paper, then the acid, and agitate briskly; lastly, the indigo, and thoroughly mix by shaking. Pass the whole through paper. Filter out of one bottle into the other till the operation has been completed. On a large scale this fine ink may be made by percolation. No gum or sugar is required, except when intended for copying; then 5½ oz. of galls should be used and 3 dr. of sugar.

We have never met with blacker or more permanent writing than that done with this ink; but we give fair warning to manipulators that they must be exceedingly careful to observe the preliminary principles, for we have seen ink turned out of all shades—from pea-green to bright blue—simply on account of the indigo paste.

We have had good results by omitting the sulphuric acid and substituting for the indigo-paste a drachm of indigo-carmine in powder. This substance has already been referred to. It gives a beautiful colour, and after adding it to the

gall-and-iron mixture the product should be well shaken and set aside for a week before decanting the clear ink. If we omit the acid and indigo-paste, the above recipe is in all respects a model one, and it may be used for the aniline blue-black ink, which is obtained by adding 2 scruples of methyl-blue to the 2 pints of liquor, of course omitting the indigo-paste, and using *dilute* instead of *pure* sulphuric acid.

We have already stated that Stephens's Blue-black Ink is supposed to be made from gallic acid direct, but there is a published formula for it, with galls, ferrous sulphate, iron filings, indigo, &c., which we traced back for nearly half a century, and then we lost all trace of 'Stephens.'

In regard to the use of Chinese galls, the fermentation can be effected by exposing the dampened powder to the air for eight to ten days in a warm place, so as to favour the growth of mould and consequent change. This process is exemplified in the following method :—

I

Chinese galls in coarse powder	ʒviss.
Powdered French chalk	ʒvj.
Rain or distilled water to	Oij.

Damp the powdered galls and place in a warm room (70°–80° F.), sprinkling water over the mass from day to day, until in from eight to ten days or longer it becomes mouldy. Then heat the mass for an hour on a water-bath with 16 oz. of water, strain, and press with the hands. Repeat the infusion with another 16 oz. of water and again with 8 oz. Add the French chalk to the strained liquors, agitate occasionally during twenty-four hours, then filter, washing the filtrate with water to 2 pints.

This is the basis for the ink. To make a blue-black proceed as follows :—

Decoction of galls	Oij.
Solution of ferric chloride (10 per cent.)	ʒiiiss

Mix, allow to stand for a fortnight in a closed bottle, and filter. Then add to the filtrate—

Phenol-blue, 3F	ʒj.
Carbolic acid	℈j.
Distilled water	ʒxvj.

Dissolved by the aid of heat. Allow the ink to stand for a week longer in a dark and cool place, and decant from any sediment which may have formed.

II. Improved

Chinese galls in coarse powder	ʒxvj.
Water	ʒxvj.

Mix together and set aside for eight to ten days, as prescribed in the preceding formula. When fermentation is complete, mix the galls with the following :—

Rainwater	ʒlxxx.
Gallic acid	ʒij.
Ferrous sulphate	ʒv.
Sulphuric acid	ʒiij.

Boil gently for half an hour in

an enamelled pan, and strain through cheesecloth. Boil the marc again in 20 oz. of rainwater for half an hour, strain, and press. Set aside for eight days and filter, bringing up to 100 oz. with recently boiled rainwater.

This stock should be kept as long as possible, and diluted and coloured when required, the formula being

Stock ink II. . . .	ʒxx.
Boiled rainwater . .	ʒlxxx.
Fresh acacia mucilage .	ʒj.
Phenol	gr. xv.

Mix and colour.

The gall-and-iron mixture of No. I. is the ink, and the phenol-blue the tint. The following are the quantities of colours for 40 oz. :—

Blue-black.—Phenol-blue 3F ʒj., ponceau gr. v., aniline-green D gr. v.

Deep Black.—Use phenol-black B ʒiij., or, for two pints, phenol-blue 3F ʒss., ponceau 2R ℈j., aniline-green D ℈j.

Violet-black.—Use phenol-blue 3F ʒss., ponceau 2R ʒss., aniline-green gr. v.

Red-black.—Use ponceau 2R ʒj. ; phenol-blue 3F gr. x., aniline-green D gr. v.

Green-black.—Use aniline-green D ʒj., phenol-blue 3F gr. xv., ponceau 2R gr. v.

Greenish Blue-black.—Use phenol-blue 3F ʒss., aniline-green D ℈iiss.

The formulas generally seen for making Blue-black Ink Direct from Tannin are fairly exemplified in the following one :—

A. Dissolve 1 lb. of tannin in sufficient distilled or rain water to make a gallon.

B. Dissolve 14 oz. of sulphate of iron and ʒv. of pure sulphuric acid in sufficient water to make half a gallon.

C. Dissolve ʒvj. of methyl-blue in 8 oz. of spirit and make up to half a gallon with water.

Mix these solutions and rinse out the bottles with enough water to make the bulk of the mixture 2½ gallons.

This formula produces a beautiful ink very quickly, but on keeping it deposits, and is apt to become a trifle slimy. This result is due to the gradual change of the tannin (as described in the introductory remarks) through the influence of the sulphuric acid and oxidation. This disadvantage is obviated in the next formulas.

I

Tannin	ʒiij.
Water	ʒiij.
Solution of ferric chloride (10-per-cent.) . .	ʒvij.
Hydrochloric acid . .	ʒiiss.

Heat in a large glass flask or bottle on a water-bath for five or six hours, then add

Hot water to . . .	Oij.

Continue to heat for an hour longer, then set the ink aside for a fortnight in a cool place and filter. To the filtrate add a mixture of

Phenol-blue 3F . .	ʒij.
Carbolic acid . . .	℈ij.
Sugar	ʒiiss.
Water to . . .	Oiij.

Dissolved by the aid of heat. Allow the ink to stand for a week in a cool, dark place before decanting.

II

Tannin	ʒviiss.
Gallic acid . . .	ʒiiss.
Distilled or rain water .	℥xc.
Sulphuric acid . .	ʒiij.

Dissolve and add

Ferrous sulphate . .	ʒx.

Boil gently in an enamelled vessel for half an hour, then set aside for two days and strain, making up to 100 oz. if necessary.

This is to be diluted (1 to 4) and coloured as required.

In No. 1. the conversion of the tannin into gallic acid is effected by heating with the hydrochloric acid, and thus the ink becomes less prone to change than when made in the cold, and without the preliminary hydrolysis. As in the case of gall ink No. 1, page 439, different tints may be imparted to this tannin ink by the use of the colours mentioned.

Common Black Gall Inks.—The ideal ink of this class—that is, the old-fashioned ink which our forefathers used, and which is still considered by bookkeepers to be unexcelled (albeit it is the thing to make crusty pens)—is represented in the following recipes :—

A. **Payen's**

Bruised Aleppo galls .	15 lbs.
Sulphate of iron . .	10 lbs.
Gum arabic . . .	20 lbs.
River-water . . .	20 gals.

Into a cylindrical copper boiler as deep as it is wide put the galls with 15 gals. of water. Cover the boiler and raise the liquor to boiling, maintaining that temperature for three hours, adding boiling water from time to time to replace that which is evaporated. At the end of the three hours draw off the liquor and let it deposit, and add to the clear solution the droppings from the marc on a filter. Separately dissolve the gum in as little warm water as will take it up, and add this to the gall decoction. In the remainder of the water dissolve the sulphate of iron, and stir this solution in with the rest.

B

Aleppo galls, bruised	℥iij.
Sulphate of iron	℥j.
Gum arabic	℥j.
Water	℥xxxiij.

Heat the galls and the gum in 30 oz. of water on a water-bath for two hours, replacing water lost by evaporation; then add the sulphate of iron dissolved in 3 oz. of water. Bottle without straining, cork loosely, and set aside for three weeks to ripen (two in the summer). Pour off as wanted.

This is also made by macerating the whole of the ingredients in the water for a month.

The second of these should be kept exposed to the atmosphere, and stirred frequently. It should be tried from time to time, and should not be allowed to become too black, or it will be less fluid. When the right colour is reached the casks should be covered and left to deposit, the ink drawn off and put into earthenware bottles, well corked and sealed. The following formulas are also satisfactory and the products cheap :—

C

Bruised Aleppo galls	℥xij.
Logwood	℥ij.
Sulphate of iron	℥iv.
Alum	ʒiss.
Carbolic acid	ʒj.
Common salt	ʒij.
Gum arabic	ʒiij.
Water	a sufficiency

Macerate the galls and logwood in ½ gal. of water for two days, strain, and repeat. In the mixed liquors dissolve the sulphate of iron, alum, and gum, and add the carbolic acid and common salt.

D

Tannin	ʒj.
Water	℥x.
Solution of perchloride of iron (10 per cent.)	℥ss.
Pure sulphuric acid	♏vj.
Water	℥vij.
Schaal's deep black E	ʒiiss.

Dissolve the tannin in the first water, and the deep black in the second. To the latter add the iron solution and the acid, then mix the solutions.

E

Logwood	2 lbs.
Alum	8 oz.
Stale beer	10 gals.
Rainwater	4 gals.

Boil gently for half an hour, and while boiling hot strain on the following :—

Bruised galls	8 lbs.
Gum arabic	2¼ lbs.
Green vitriol (ferrous sulphate)	4 lbs.

Stir two or three times a day for a month in an open vessel, then strain, and wash the marc with ½ gal. of water.

'C' is an ink with very good 'body,' but, like all gall inks to which logwood is added for tinctorial effect, the writing is apt to go brown in a few years, although it never fades utterly. The beautiful appearance of the ink in use is, how-

ever, an attraction difficult to resist. We introduce formula E as evidence, having before us the original formula written with the ink a hundred years ago. It is still jet-black in parts, and the rest dark brown. The fact should, however, be mentioned, that the rag papers used in those days did not react with ink as the wood-pulp and other papers of to-day undoubtedly do.

A great variety of formulas have from time to time been printed in *The Chemist and Druggist*, some of them having special names, and when they are all brought together we find that they more or less resemble those which are printed here. Others appear not to exist elsewhere than in technical journals, and it is unnecessary to do more here than to refer to such formulas in the briefest possible way :—

Alizarin Ink

Invented by Leonhardi of Dresden in 1856 ; it was an iron-gallic solution coloured with indigo-sulphuric acid and madder. It may be made by adding 2 dr. of indigotin to 2 pints of gall ink No. 1, p. 439 ; also as follows :—

Extract of logwood . .	ʒvj.
Alizarin paste . . .	ʒiss.
Carbonate of sodium .	ʒij.
Water	ʒxxx.

Dissolve the carbonate in a little water, add the alizarin paste, and, lastly, the extract of logwood dissolved in the rest of the water, and filter. Transfer the liquor to a W.Q. bottle, drop in a few nails or iron filings, and expose the whole to the sunlight for about a week, with occasional shaking. Decant and add carbolic acid ʒj.

Bank of England Ink

Similar to formula 'B,' with the addition of glycerine ʒiss. to each pint.

Bean's French Ink

A gall ink also like 'B,' but containing tormentil-root (1 part to each 5 parts of galls) and lamp-black, sugar-candy, honey, and white sugar. These latter constituents convert it into a copying-ink.

Chaptal's Ink

Similar to 'C,' without the second three ingredients, and made with calcined sulphate of iron. For a pint of the ink ʒiss. of the calcined sulphate is used.

Counting-house Ink

A gall ink like the Edinburgh formula (p. 438), with the addition of sulphate of copper ʒss., gum ʒij., and glycerine ʒj. to the quantity given.

Document Ink

Substantially No. 1 blue-black (p. 439).

Parliament Ink

Similar to counting-house ink without the gum.

Travellers' Ink

Blotting-paper is saturated with a solution of methyl-violet, aniline-blue, or any other aniline-colour, to which 10 per cent. of acacia mucilage has been added. Four sheets of the paper are pressed together, dried, then cut into ½-inch squares. One of these squares put into a teaspoonful of water makes ink.

Treasury Ink

In 1 pint of 'B' dissolve nigrosin ℈j.

Vanadium Ink.—Berzelius was the first to suggest the use of vanadium tannate as a writing-ink, which he made by adding a solution of metavanadate of ammonium to a decoction of galls. This forms a deep black liquid containing no precipitate. Alkalies do not act upon the writing; acids turn it blue; and although chlorine destroys the black colour it does not efface the writing. Berzelius said so in 1832, and the statement has become classical. It is doubtless correct, but a far better use for vanadium has been found in the preparation of aniline-black. The ink may be made in several ways. One of the simplest is to add to a pint of Chinese-gall decoction (p. 439) a scruple of vanadate of ammonium, or, as Siemens suggested, dissolve 1 oz. of tannin in 16 oz. of water; to this add 1 oz. of acacia mucilage and a solution of 15 gr. of vanadate of ammonium in sufficient water to make the ink measure 1 pint. Our experience with vanadium ink is disappointing.

LOGWOOD WRITING-INKS

The second, and in many respects highly important, class of writing-inks which we have to deal with are those made from logwood or the extract thereof. Reference has already been made in the introduction to the peculiarity which distinguishes gall and logwood inks. The former may be said to be ferro-organic dyes; the latter are purely organic. The distinction as affecting logwood may be further explained, for anyone who has experience in the manufacture of logwood ink is aware that slight alterations of details and conditions in manufacture have occasionally very notable effects upon the product.

Logwood in its natural and fresh-cut state is a yellow wood, which on exposure to the air and self-fermentation acquires the purplish colour with which chemists are familiar. The change is due to the alteration of the active principle of the wood, hæmatoxylin ($C_{16}H_{14}O_6$), a body which can be obtained in a monohydrated condition as yellow crystals. This body is very readily oxidised, either by exposure to the air in presence of moisture, or through the influence of oxidising

agents, such as chromate of potassium. There is formed a new and intensely tinctorial body, hæmatein ($C_{16}H_{12}O_6$), which, it will be seen, is simply hæmatoxylin *minus* two atoms of hydrogen. Hæmatein of itself is a red body, not very soluble in water—indeed, sparingly soluble—but it forms water-soluble compounds (they cannot be called 'salts') with ammonia and other alkalies. The ammonia compound is $C_{16}H_{12}O_6.2NH_3$, which dissolves in water with a purplish hue, and to which all other alkali combinations are akin in colour. These compounds are split up by acids—even acetic acid—hæmatein being precipitated. Logwood contains very little tannin, its astringency being due chiefly to hæmatoxylin. For that reason the inclusion of metallic salts, such as iron sulphate and copper acetate, in logwood inks has for its object the fixation of the colouring principle hæmatein rather than the production of an inky compound such as we find in gall inks. Most of the metallic salts act as mordants, and so do the chromium compounds. These observations will now be of service in considering the various formulas. Runge (who lived early in the nineteenth century) appears to have been the first to take advantage of the peculiar properties of logwood in ink-making. Before his day it was used in conjunction with galls—therefore empirically. He started out in search of an ink which (1) would not deposit, (2) would adhere well to the paper, (3) would not be affected by acids, and (4) would not corrode steel pens. He 'succeeded in obtaining a composition of the kind required, very simple in its preparation, and free from vinegar, gum, copperas, blue vitriol, and even nutgalls. The fluid is prepared,' he continues, 'by simply adding 1 part of chromate of potash to 1,000 parts of decoction of logwood, made by boiling 22 lbs. of logwood in a sufficient quantity of water to give 14 gals. of decoction. To this decoction, when cold, the chrome salt is gradually added, and the mixture well stirred. The addition of gum is injurious. . . . It appears astonishing what a small quantity of the chrome salt is required to convert a large quantity of decoction of logwood into a black writing-fluid.'

The last remark is of interest. Practically it requires 1 part of potassium chromate to oxidise completely 3 parts of hæmatoxylin, but this quantity is never used in making logwood ink. Thus, in Runge's own formula, supposing the decoction contains all the hæmatoxylin in the wood used, the proportion of chromate employed is somewhere between one to fifteen and one to ten—too small a proportion for complete oxidation. Theory would therefore seem to point to a greater proportion of chromate than Runge indicates, but practice is entirely against it. What is wanted is to oxidise part of the hæmatoxylin only, and leave the rest to change by age or after writing. Moreover, excessive oxidation also means thickening, owing to the formation of a glutinous body, which makes the ink stringy and objectionable. That, indeed, is the objection to Runge's own ink. His formula is not used now; but the following simple modification of it is good. Here we may say that extract of logwood may be economically used in ink-making. It may be reckoned as six times stronger than logwood itself:—

I

Extract of logwood	℥ss.
Sodium carbonate (crystals)	℈iiss.
Neutral potassium chromate	gr. xiv.
Water to	Oij.

Dissolve the extract in 38 oz. of water, allow to settle, decant, and boil. Add the soda, and when cold add, with constant stirring, the chromate dissolved in 2 oz. of water.

II

Extract of logwood	℥x.
Bichromate of potassium	℥ss.
Chrome alum	℥iss.
Oxalic acid	℥iiss.
Carbolic acid	gr. xv.
Water to	℥xxxv.

Warm the extract with 6 oz. of water on a water-bath, stirring constantly until the solution is uniform; then add a pint of warm water and maintain the temperature a little below the boiling-point—say, 180° F.—for ten minutes. Allow the solution to become quite cold, so that the resinous and other insoluble matter may be precipitated. Decant from this, and again heat to 180° F., while adding very gradually a solution of the bichromate, chrome alum, and oxalic acid in 5 oz. of water. Continue to heat for half an hour, then dilute to the required volume, adding the carbolic acid to the water. Set aside for a few days to settle, and decant the clear ink.

Sodium carbonate prevents the ink becoming thick. The ink made from No. I. formula is nice, writing a purplish-black colour. No. II. is a very beautiful ink of the Dichroic Type.

Unless otherwise stated, rain or distilled water should be used in making logwood ink. Water of more than two degrees temporary hardness gives peculiar and generally unsatisfactory results. The following formula is a Russian one, and in our own experience, as well as in that of many *Chemist and Druggist* subscribers, gives one of the finest inks possible :—

III

Extract of logwood	ʒxxv.
Lime-water	ʒxxv.
Hydrochloric acid	ʒv.
Bichromate of potassium	gr. XLV.
Carbolic acid	gr. XLV.
Gum arabic	ʒj.
Distilled water to	Oiiss.

Reduce the extract to coarse powder and in a quart basin mix it gradually with the lime-water. Heat on a water-bath until solution is effected, then add the acids and continue to heat for half an hour. Set aside to cool, and decant the clear liquor into a 7-lb. earthenware jar. Add to it gradually, and with constant stirring, the bichromate of potassium dissolved in 10 oz. of water, next the gum, also dissolved in water, and make up to the required volume. Set the ink aside for several weeks before using.

By using ʒiv. of hydrochloric acid and ʒij. of bichromate a violet ink is obtained. As it is, the above ink writes red (like Antoine's well-known fluid), and the writing becomes of a beautiful black colour. Sometimes, owing to the variable nature of logwood extract and weak lime-water, the ink is dreadfully thin and weak-looking; for the latter reason we have found it to be, on the whole, more satisfactory to use, instead of lime-water, a scruple of fresh-slaked lime shaken up with 25 oz. of tap-water. A similar modification is provided in the next formula. 'Hematine' is a sort of purified logwood extract. It is an article largely used in the dye trade, and should not be confounded with hæmatein, of which it contains about 10 to 20 per cent., with 50 to 55 per cent. of hæmatoxylin :—

IV

Hematine	ʒiv.
Slaked lime	gr. xij.
Distilled water	ʒxv.

Heat gently to dissolve. Allow to cool and deposit; decant and add

Carbolic acid	gr. v.
Hydrochloric acid	♏XL.
Distilled water	ʒj.

Mix, allow to settle for half an hour, and decant again, and add gradually, and with constant stirring

Chromate of potassium	gr. viij.
Distilled water	ʒij.

Finally, add an ounce of fresh mucilage and make up to 1 pint with distilled water. This is a true violet-black ink.

The foregoing are all more or less simple. We conclude the series with several examples of the more complex inks which have logwood as their basis :—

V

Extract of logwood (extra fine French)	ʒiij.
Oxalate of ammonium	ʒj.
Sulphate of aluminium	ʒj.
Oxalic acid	ʒij.
Bichromate of potassium	gr. lxxv.
Salicylic acid	gr. xv.
Distilled water	a sufficiency

Powder the first four ingredients and dissolve in 25 oz. of water by boiling. To this add the bichromate dissolved in 5 oz. of warm water, then the salicylic acid, and set aside for two or three weeks. Decant and bottle.

'One of the best copying-inks in existence.' It is like the celebrated French copying-ink.

VI

Liquid extract of logwood	ʒvj. ʒij.
Indigo carmine	ʒv.
Alum	ʒvj.
Sulphate of iron	ʒj.
Sulphate of copper	gr. xlv.
Glucose	ʒss.
Gum arabic	ʒss.
Chromate of potassium	ʒss.
Salicylic acid	gr. v.
Water	ʒxxxvj.

VII

Liquid extract of logwood	ʒvj. ʒij.
Sulphate of iron	ʒij.
Chromate of potassium	ʒss.
Indigo carmine	ʒiv.
Gum arabic	ʒss.
Glycerine	ʒss.
Salicylic acid	gr. v.
Vinegar	ʒiij.
Distilled water	ʒxxx.

In each case mix the extract of logwood with a pint of the water and heat to a temperature of about 200° F. for ten minutes. Then add the rest of the water (and, in the case of the first, the vinegar) in which the other ingredients have been mixed in the order given above and dissolved. Mix thoroughly, and set aside for a few days to settle.

VIII

Extract of logwood	ʒxij.
Distilled water	ʒxxiv.

Powder the extract in a mortar and dissolve in the water without heat, then add

Potassium chromate	gr. xxx.
Distilled water	ʒj.

Set aside for twenty-four hours, decant the clear liquor, and add to it the following solution :—

Oxalic acid	gr. xlv.
Ammonium oxalate	ʒv.
Aluminium sulphate	ʒj.
Distilled water	ʒvj.

Again set aside for twenty-four hours, then boil and add ʒiss. dilute acetic acid. Bottle, and set aside for at least a fortnight before decanting the clear ink.

IX

Extract of logwood	ʒx.
Oxalic acid	gr. lxxv.
Aluminium sulphate	ʒj.
Glycerine	ʒiiss.
Distilled water	ʒxxv.

Dissolve without heat, and after twenty-four hours add to the clear liquor

Potassium bichromate	gr. lxxv.
Distilled water	ʒiij.

After twenty-four hours boil and add ʒiss. dilute acetic acid. Bottle, and at the end of a fortnight, or longer, decant from the sediment.

These are both writing-inks,

No. VIII. being red-black, and No. IX. a beautiful violet-black, as is also

X.

Make a solution of logwood extract 20 oz. in water 100 oz. by gently warming on a water-bath. Set aside for a week to deposit, and use in the following manner :—

Logwood solution . .	ʒLX.
Sulphuric acid . .	ʒvj.

Mix.

Aluminium sulphate .	ʒiv.
Water	ʒXL.

Dissolve and add—

Potassium carbonate .	ʒiv.

When effervescence ceases add—

Oxalic acid . . .	ʒiv.

Warm slightly to get rid of carbonic-acid gas, then add—

Potassium bichromate	ʒiij. gr. xv.

Mix this solution with the logwood one, and warm gently for fifteen minutes; add acacia mucilage ʒiss. and phenol ℈ij. Set aside for fourteen days, and decant the clear ink into bottles.

Nos. VI. and VII. are for copying. The liquid extract is to be made by treating 1 part of extract of logwood with 5 parts of hot water for half an hour on a water-bath, then setting aside for a week, and decanting the clear portion.

Cheap Black Inks.—The following may be made extemporaneously. They are good enough as school ink, but not sufficiently permanent for general office work :—

I

Aniline-black 'B' .	ʒij.
Acetic acid . . .	ʒij.
Gum arabic . . .	ʒij.
Water	1 gal.

Put the aniline-black in a jar and pour the acetic acid, diluted with ʒviij. water, upon it. Separately dissolve the gum in a few ounces of water, add to the rest of the water, which pour into the jar, shaking well to dissolve.

II

Aniline-black . . .	ʒj.
Pyrogallic acid . .	ʒss.
Ferrous sulphate . .	ʒij.
Water	1 gal.

Dissolve the aniline-black and ferrous sulphate in most of the water, and the pyrogallic acid in the remainder. Mix the solutions.

III

Ac. pyrogallic. . .	℈x.
Ferri sulphatis . .	℈viij.
Sodii sulphit. . . .	℈iv.
Mucil. acaciæ . . .	ʒss.
Aq. destil. ad . . .	ʒxx.

Dissolve the first two in half the water, then mix with sodium sulphite dissolved in the remainder.

IV

Phenol-black 'B' . .	ʒv.
Distilled water . .	ʒij.

Mix, allow to stand for two hours, then add the following :—

Hot distilled water . .	ʒxxv.
Sugar	ʒv.
Carbolic acid . . .	gr. xv.
Pure sulphuric acid . .	♏v.

Shake occasionally until solution is complete.

COPYING-INKS

The copying-press, as now used in most offices, was invented by James Watt, the engineer, in 1780. The ink he patented at the same time was :—

Spring-water	4 quarts
Aleppo galls	1½ lb.
Green vitriol	½ lb.
Gum arabic	½ lb.
Roach alum	4 oz.

'Infuse' in water for from six weeks to two months, frequently shaking, then strain through linen and bottle.

In composition copying-inks do not differ from ordinary writing-inks, sugar, glycerine, or gum arabic (one or all of them) being added to the latter in the proportion of 2 to 4 dr. to the pint. For single copies the addition of sugar, ℥ss. to the pint of a gall ink, makes a satisfactory fluid ; but gum arabic is equally good, and the ink keeps better ; best of all is glycerine ℥ss. and mucilage of acacia ℥ss. to 30 oz. of the writing-fluid. Deliquescent salts are also used with glycerine—*e.g.*, ammonium nitrate 2 to 4 per cent. Ink to give a number of copies must have high tinctorial power, and for that reason red-black logwood ink, such as Antoine's, is preferred, honey or treacle, with a little gum, being used as the adhesive agent. The following formulas show how the inks are made direct :—

I

Aleppo galls	℥viij.
Alum	℥ss.
Brazil wood	℥ss.
Sugar	℥ss.
Malt vinegar	Cong. j.

Infuse for twenty-four hours in a glazed earthenware vessel, frequently stirring it ; raise it to boiling-point, and boil down to two-thirds of its original volume. Strain, and add 1½ oz. dried sulphate of iron. Let it stand some days in the sun, and afterwards bottle.

II

Gall basis (p. 439)	℥xxiv.
Aniline water-blue I.B.	℥iiss.
Glycerine	℥ij.
Gum arabic	℥v.
Sugar	℥iiss.
Water	℥viij.

Mix, and set aside for a few weeks.

A ruby ink is made by using ℥iiss. of ponceau RR in place of the aniline water-blue in No. II. Both the inks and

the copies ultimately turn jet black. Other colours are obtained with aniline-green D ʒiiss., deep-black E ʒv., or indigo-carmine ʒiiss., in place of the aniline-blue.

Violet		Blue	
Methyl-violet 3 B . .	℈j.	Resorcin-blue . . .	gr. x.
Sugar	gr. x.	Sugar	gr. x.
Oxalic acid . . .	gr. ij.	Oxalic acid . .	gr. ij.
Distilled water . .	ʒij.	Distilled water . .	ʒij.
Dissolve.		Dissolve.	

Other aniline colours may be used similarly. These inks are very strong, and afford a dozen copies easily.

Dr. John Attfield's Copying-ink, to be used without a press, is made in the following manner :—

Reduce, by evaporation, ten volumes of ink to six, then add four volumes of glycerine. Or manufacture some ink of nearly double strength and add to any quantity of it nearly an equal volume of glycerine.

Although this ink could not be 'used by all persons, at all times, under all circumstances,' with satisfaction, the late Dr. Attfield stated at the British Pharmaceutical Conference in 1881 that he had used it since 1868. Strange to say, a similar ink was patented ten years before that with glycerine or glycerine and honey as the copying-agent. In using the ink one simply writes with it on cream-laid paper and uses the copying-sheet as a blotter. It smears a little, but not much.

The Copying-pad known as the Hectograph, Graph, and by other names, was invented by two foreigners, and was patented in England in 1878. The patent has accordingly lapsed, and anyone may make the composition, which consists of a mixture of glycerine 4 parts, water 2 parts, and gelatin 1 part, all by weight. The gelatin is immersed in the water until it absorbs it all; the glycerine is then added, and the whole heated on a water-bath until solution is effected. It is then poured into a shallow tray, such as the lid of a tin jujube-box, and allowed to solidify. The first varieties of graphs were thus transparent, and were not washed after use: the ink simply sank into the pad. Powders were added to keep the ink on the surface, and so give sharper writing. It was also easy to wash off the writing. Smith's patent of 1888

was china clay 45, starch 15, glycerine 30, and water 10. The gelatin composition is now supplied spread on sheets, one sheet being used for each letter and destroyed. The ink employed is an aniline-dye solution. The original formulas are :—

Violet Ink		Red Ink	
Methyl-violet	1 part	Rosaniline	2 parts
Water	7 parts	Water	10 parts
Alcohol	1 part	Alcohol	1 part

In each case dissolve the solids in the mixed liquids taken by weight.

The matter to be reproduced in facsimile is written with the ink upon well-glazed paper, and when the writing is dry it is transferred to the pad by placing the sheet of paper, face downwards, evenly upon the pad and rubbing with the hand. Care should be taken that there are no wrinkles upon the paper. Allow the paper to remain upon the pad for about five minutes, then pull it off carefully. Now take a piece of paper of the same size as the original, but not so highly glazed, and lay it upon the pad, going from top to bottom and smoothing it out evenly, using a squeegee. A few seconds suffice to take the first copy; then take another, and so on to the extent of forty or fifty; but towards the end much longer contact is required, or slightly damped paper may then be used.

When the process is finished rub the face of the pad with a cloth or sponge damped with a mixture of water 7 and hydrochloric acid 1, then with pure water, to remove most of the writing, and set aside for at least twelve hours, when it will be ready for use again. Many other formulas have been proposed, but the following are sufficiently typical. Glue may, of course, take the place of gelatin :—

Gelatin	ʒiij.
Water	ʒiv.

Cut the gelatin small and soak for twelve hours in the water, then add

Glycerine	ʒxx.

Heat gently until dissolved, and pour into a suitable flat box.

II

Gelatin (cut small)	ʒj.
Demerara brown sugar	ʒj.
Glycerine	ʒvj.
Barium sulphate	ʒiiss.
Water	ʒiv.

Steep the gelatin in 3 oz. of water till soft, add the glycerine, and heat; then add the sugar and

dissolve. Rub the sulphate smooth with the rest of the water and add to the mass, mixing well.

Violet Ink

Methyl-violet aniline	ʒij.
Spirit	ʒij.
Water	ʒvj.

Mix.

Black Ink

Induline R	ʒiss.
Glycerine	ɱxxv.
Alcohol (60-per-cent.)	ʒj.
Water	ʒiss.

Dissolve.

Blue Ink

Resorcin-blue M	ʒj.
Acetic acid	ɱvj.
Glycerine	ɱxxv.
Rectified spirit	ʒj.
Distilled water to	ʒiss.

Green Ink

Aniline-green D	ʒij.

Liquids the same as for blue ink.

To make these, mix the liquids, warm, and dissolve the dye in the hot fluid.

Ink Powders and Extracts.—The use of ink-powders is very old. 'Secrets of Alexis' (1580) says: 'A good waie and maner how to make inke for to carry about a man in a drie powder, whiche (when he will write with) he must temper with a little wine, water, or vinegar, or with some other licoure, and then he may incontinente put it in experience.' Arnold Cooley in 1867 practically exhausted the subject up to the time when aniline dyes became commercial articles. He gave particulars of the preparation of all colours in powdered inks with logwood basis, and noted that a little ox-gall extract (1 to 3 per cent.) counteracts the greasiness. These preparations are useful, and might be more pushed by chemists. The quantities in the first two formulas are intended for a winebottleful of soft water, and may be put up in a suitable box or packet to retail at 6*d*. The powder is to be added to the water, and the mixture gently boiled for from fifteen to twenty minutes, and when cold the ink should be bottled and set aside for four weeks before using:—

	Plain	Copying
Tannin	ʒj.	ʒix.
Dried sulphate of iron	ʒiiiss.	ʒiv.
Gum arabic	gr. lxxv.	ʒiv.
Sugar	℈ij.	gr. lxxv.
Aniline water-blue B	℈ij.	gr. lxxv.

Gall-ink Extracts

I

Pulv. gallæ . . .	℥v.
Ferri sulph. . . .	℥iss.
Pulv. acaciæ . . .	℥j.
Pulv. alumin. roch. .	℥ss.

Mix and divide into 1-dr. powders, each of which should have a teacupful of hot water poured upon it; stir and when cold decant from the sediment.

II

Extract of logwood . .	℥v.
Dried carbonate of sodium	℥ss.
Chromate of potassium .	℥ss.

Mix.

This should be put up in ½-oz. packets, each of which is sufficient to make a winebottleful of ink with cold water.

Aniline-ink Extract

Deep black E . .	℥j.
Sugar in coarse powder .	℥j.
Potassium bisulphate .	℥j.

Mix.

For a gallon of ink.

A foreign author gives the following quantities for 1,000 of water :—

Black

Aniline-green D . .	2·5
Ponceau 2 R . . .	2·5
Phenol-blue 3 F . .	2·5
Sugar	20·0
Potassium acid sulphate .	1·0

Blue

Resorcin-blue M . .	6·0
Sugar	20·0
Oxalic acid . . .	1·0

Violet

Methyl-violet 3 B . .	6·0
Sugar	10·0
Oxalic acid . . .	2·0

Red

Eosin A (yellow shade) .	10·0
Sugar	30·0

Copying-ink Powders

[Proportion of colour greater.]

Violet.—Methyl-violet 3 B 12, sugar 10, oxalic acid 2.

Blue. — Resorcin-blue M 10, sugar 10, oxalic acid 2.

Red.—Eosin A (yellow shade) 15, sugar 30.

Superior Logwood Extract

Extract of logwood . .	℥x.
Aluminium sulphate .	℥ss.
Potassium oxalate . .	℥vj.
Potassium bisulphate .	℥j.
Potassium bichromate .	℥ss.
Salicylic acid . . .	gr. x.

Mix the coarse powders.

Sufficient to make 2 quarts of good ink by the addition of lukewarm water.

Ink-tablets

I

Powdered galls . .	℥ij.
Powdered sulphate of iron	℥v.
Powdered sulphate of copper . . .	gr. xv.
Powdered alum . .	℥j.
Powdered sugar-candy .	℥iss.
Powdered gum arabic .	℥iiss.
Powdered cream of tartar	gr. xv.

Make into a stiff paste with a mixture of glycerine 1 part and water 2 parts. Mould in ½-oz. tablets and dry.

Each tablet for a pint of ink.

II

(Expired patent)

Nigrosin . .	60 grains
Sodium bicarbonate	17 grains
Tartaric acid . .	16 grains
Gum arabic . .	12 grains
Water . .	to granulate

The effervescence does away with the necessity of stirring or shaking the ink.

COLOURED WRITING-INKS

Such a change has come over this department of ink-manufacture in recent years, owing to the utilisation of aniline-colours, that the formulas for reds, blues, greens, &c., contained in the first fifty volumes of *The Chemist and Druggist* might be wiped out without much harm being done. But we do not propose to do that. One has a certain affection for that bright scarlet ink of days gone by which is an elegant preparation of Brazil wood that corrodes pens frightfully, but leaves wonderfully stable writing; and even the crimsons that we get from cochineal and carmine have their attraction. So, too, the blue from Prussian blue, and the green from copper salts. These we keep together, but for brightness of colour, general utility, and ease of manufacture there is nothing to equal the aniline-inks. The Badische Anilin und Soda Fabrik give the following list of the best aniline dyes for coloured inks :—

Red.—Eosine, erythrosine, phloxine, ponceau scarlet, and cotton scarlet.

Green.—Neptune green S G, diamond green G & B, Light green S F (yellowish), and light green S F (bluish).

Blue.—Indigo carmine and soluble blue T.

Violet.—Acid violet 4 B L.

Yellow.—Fast yellow and tartrazine.

The proportion required is a drachm to 6 oz. to 8 oz. of water. The addition of gum acacia is not desirable.

Cochineal Red

Cochineal	ʒss.
Gum arabic	ʒss.
Cream of tartar	ʒj.
Distilled water	ʒviij.

Boil, filter, make up to 8 oz., and add

Alum	ʒij.
Spirit of cloves	ʒj.

Mix.

This is a very old form. The ink may also be made exactly in the same way as liquid cochineal, omitting glycerine.

Eosin Red

Eosin B	ʒj.
Solution of perchloride of mercury	ʒss.
Mucilage of acacia	ʒij.
Oil of lavender	1 drop
Rectified spirit	ʒij.
Distilled water to	ʒiv.

Dissolve the eosin in the solution and 2 oz. of water, add the mucilage, and mix, then the oil dissolved in the spirit, and finally make up.

Carmine Red

Carmine	ʒss.
Solution of ammonia	℥ss.
Mucilage	ʒij.
Water to	℥iv.

Dissolve the carmine in the ammonia, and add the mucilage and water.

Brazil Red

Brazil wood	ʒij.
Solution of protochloride of tin	ʒij.
Mucilage of acacia	ʒij.
Water	℥xxxij.

Boil the whole together until the bulk is reduced to one-half, then strain.

Blue

Resorcin-blue M	ʒj.
Distilled water	ʒvj.

Mix and agitate occasionally for two hours, then add

Hot distilled water	℥xxiv.
Oxalic acid	gr. x.
Sugar	℥ss.

Shake well. This and other aniline inks can be perfumed by rubbing up a drop of otto of rose with the sugar before dissolving it in the hot water.

Orange

Aniline-orange	ʒj.
Sugar	ʒij.
Distilled water	℥viij.

Dissolve.

Green

I

Picric acid	ʒij.
Boiling water	℥vj.

Dissolve and add to a solution of

Indigo carmine	℥j.
Water	℥xxv.
Mucilage of acacia	ʒij.

Mix.

II

Water-soluble methyl-green	ʒiiss.
Distilled water	℥j.

Mix and after two hours add

Hot distilled water	℥xxx.
Sugar	ʒv.

Proceed as with the blue.

Violet

Methyl-violet, 3 B	ʒiiss.
Distilled water	℥j.

Mix and after two hours add

Hot distilled water	℥xxx.
Oxalic acid	ʒss.
Sugar	ʒiiss.

Mix thoroughly until dissolved. Set aside for a few hours to settle, and decant.

Yellow

A solution of gamboge 1 part in water 5 parts and rectified spirit 1 part. Rub the gamboge with the spirit and the water, and filter.

Any other aniline-colours may be used similarly to the green-ink formula.

White Ink is a mixture of exceedingly fine zinc-white with gum and water, such as: Zinc-white ʒij., white precipitate gr. v., mucilage ʒj., water ʒvj. Triturate the zinc-white and the precipitate with 2 dr. of water until perfectly smooth, then add the mucilage and the rest of the water.

Prussian-blue Ink is made by dissolving 1 oz. of soluble Prussian blue in 8 oz. of water to which 1 oz. of oxalic acid has previously been added. It requires the addition of ½ oz. of acacia mucilage. It is a fairly permanent ink, but is liable to attack steel pens.

Shoemakers' Inks should have exceptional body and penetrating power. They are used for inking the edges and soles of boots. The following are typical formulas based on analyses of popular American inks of this class :—

I

Crushed galls . .	1 lb.
Extract of logwood .	4 oz.
Water	½ gal.

Boil together for half an hour, strain, and wash the strainer with water to ½ gal. Again boil for ten minutes with 3 pints of water, to which ½ lb. of copperas and ½ lb. of gum arabic are added, and strain into the other decoction. Separately mix together—

Fine lampblack . .	6 oz.
Salicylic acid . .	3 dr.
Methylated spirit . .	8 oz.

To this add some of the ink to form a smooth cream, and mix with the bulk.

II

Nigrosin . . .	1 oz.
Gall ink (without gum) .	2 pints

Dissolve by vigorous shaking, and add to it the following solution :—

Ground shellac . .	2 oz.
Powdered borax . .	1 oz.
Water	12 oz.

Dissolve and strain.

Powder for Making Shoemakers' Ink

Powdered galls . .	℥ij.
Copperas . . .	℥j.
Sulphate of copper . .	℥ss.
Powdered gum . .	℥j.

Mix.

Directions. — Pour a quart of boiling water upon the powder and let it stand for a week.

MARKING-INKS

There is probably no article which brings the chemist and druggist so much into trouble as silver marking-ink. Since the days of the pounce-bottle and silver solution there have been many improvements, but the trouble is still with us. The first silver marking-ink was a solution of silver nitrate in gum-water, and the 'pounce' was a solution of sodium carbonate with which the fabric was first treated, and after it dried the writing was done with the silver solution. Or the 'pounce' was a solution of stannous chloride, and the 'ink' a gold-chloride solution. In both cases reduction of the metallic salt was expedited by heating. Prior to the employment of these two-solution inks a dry pounce of alkaline-resinous nature appears to have been in use. In both cases the purpose was the same—viz., conversion of silver nitrate into carbonate and

reduction of this by heat to the oxide or metal. The most notable advance was made in 1846, when the Rev. J. B. Reade, whose work on photography helped to found this art as it is at present practised, produced a marking-ink by rubbing together equivalents of tartaric acid and silver nitrate, neutralising and dissolving with ammonia solution, and adding sufficient water, mucilage, and colouring to make a writable ink. Mr. Reade so far followed tradition as to suggest the addition of purple of Cassius or other gold salt, which also would have served to give permanency to the ink, owing to the fact that gold resists the action of chlorine in bleach better than silver does. The next progressive step was made by Professor Theophilus Redwood, who in the 'Supplement to the Pharmacopœia,' 1848, published a formula for a solution of silver tartrate of which No. I. is a working modification, and for illustrative purposes we contrast with it Mr. Reade's idea in No. II. These are the formulas which are even now generally adopted for silver marking-ink, and they are so typical that it is unnecessary to quote more :—

I

Nitrate of silver	ʒiij. ʒij.
Sodium carbonate	ʒiij.
Tartaric acid	ʒxss.
Solution of ammonia (·880)	ʒiiiss.
Archil	ʒj.
Paste chlorophyll	ʒj.
Powdered acacia	ʒiiss.
Sugar	ʒiss.
Water	a sufficiency

Dissolve the silver and soda salts separately, each in 2 pints of boiling water, and mix. Allow the precipitate to settle, decant the fluid, and collect the precipitate on a paper filter; wash with a pint of water, and, when drained, transfer to a mortar; add the acid (in powder) and mix. When effervescence has ceased add the ammonia solution, stir to dissolve, and transfer to a bottle containing the sugar (powdered). Mix the chlorophyll with 4 oz. of water and the archil, add the acacia to this, and, when dissolved, strain. Now add the ammoniacal solution and make up to 20 oz. with water.

II

Argent. nitrat.	ʒj.
Potass. bitart.	ʒj.
Liq. ammon. fort.	ʒiss.
Archil	ʒss.
Pulv. sacch. alb.	ʒvj.
Pulv. acaciæ	ʒx.
Aquam ad	ʒvj.

Rub the silver and potash salts in a mortar with 1 oz. of water, add the ammonia, and to this add the other ingredients (previously mixed with 1 oz. of water), making up to 6 oz. with water.

Both of these are professedly ammoniacal solutions of tartrate of silver, but No. II. contains other salts. The principal objections made against silver inks are (1) burning of the fabric and (2) want of permanency. The first may occur (*a*) in the process of marking, (*b*) in the laundry.

It may be said of (*a*) that no silver inks are of an acid nature. The silver salts are not the cause of the burning, but in such an ink as No. II. we have an explanation of this—viz., in so far as nitrate of ammonia is present, and as ammonia salts are dissociated at high temperatures, when a hot iron is applied to the fabric, acid is freed for a time sufficient to act upon the fabric. This is not the case with No. I. carefully prepared, since only tartrate of silver is in solution.

(*b*) It will be noted that the effect of heating the writing is to reduce the silver tartrate to the metallic state, or, if insufficiently heated, to the oxide. If other silver salts than the tartrate be present they are not likely to be reduced further than to the oxide. By heating No. I. sufficiently, we have only metallic silver deposited in the fabric, and with No. II. oxide also. Now it has been proved that this oxide is the indirect cause of the burning of the fabric in the laundry. Chlorinated lime being used for bleaching-purposes, the hypochlorite of calcium therein contained reacts with the silver oxide to form chloride of silver and oxide of calcium, and the latter rots the fabric in time. On two points, therefore, formula No. II. is wholly objectionable.

Want of permanency may also be attributed to two causes —viz., (*c*) deficiency of silver and (*d*) thickness of the ink. If the ink be too thick, it follows that there will be only surface-marking, and, consequently, under the wear and tear of the fabric it disappears. No. I. does not have this objection, but as it may vary with the quality of acacia, it is well to test the ink before sending it out.

To impart a crimson instead of a brown colour to the ink substitute ʒj. of carmine for the archil and chlorophyll, dissolving it in the ammonia; while a blue ink is obtained by

adding 5 gr. (or more) of sulphate of copper to each ounce with a corresponding increase of ammonia solution.

To make silver marking-ink suitable for stamping add 1 dr. of glycerine and the same of treacle to each ounce.

Aniline Marking-ink (Two Bottles)

(1)

Aniline	ʒj.
Paratoluidine	gr. x.
Dilute hydrochloric acid	ʒij.
Mucilage of acacia	ʒij.

Dissolve the paratoluidine in the aniline, add the acid and the mucilage, and mix.

(2)

Chloride of copper	℈ij.
Chloride of sodium	ʒss.
Chloride of ammonium	℈j.
Chlorate of potassium	℈j.
Distilled water	ʒv.
Mucilage of acacia	ʒiij.

Boil the water and dissolve the salts in it, add the mucilage, and mix.

For writing equal parts of each solution should be mixed immediately before use. The ink is put up in cases containing a bottle of each solution and a small earthenware dish in which the ink is mixed, together with a quill nib, as a steel pen must not on any account be used. Cases containing two empty ʒij. square phials (lipped) and an earthenware dish are sold by druggists' sundriesmen. The box should be labelled as follows :—

Directions for Use.—Shake the bottles and mix two or three drops from each one in the palette contained in the box, and stir with the quill nib, when the ink is ready for writing, which should on no account be done with a steel pen. The quill or a gold pen should be used.

N.B.—Allow the writing to dry. The linen may be gently warmed on steam or hot-water pipes, or before a fire, but a hot iron should not be passed over it.

The above formula provides an excellent marking-ink, and one which can be sold at 1*s.* per case at a handsome profit. The formula was perfected by Mr. Robert Wright, of Buxton, and is the best working formula which we know of. Single-bottle aniline marking-inks are somewhat unsatisfactory in the making, but of all the formulas which have been proposed the following are the most reasonable.

Aniline	℥xiij.
Potassium chlorate	ʒviss.
Distilled water	℥iv.

Heat together on a water-bath (80° to 90° C.) until the chlorate is dissolved; then add

B.P. hydrochloric acid . . .	℥iv.

Continue to heat until the action ceases, then add

Pure copper chloride . . .	ʒj.
Distilled water	℥iij.

Previously dissolved; and lastly add

B.P. hydrochloric acid . . .	℥v.

Heating on a water-bath until the solution becomes of a bright reddish-violet colour. Set aside for a few days in a closed flask to settle and decant the clear portion. Add to it sufficient powdered acacia to make the ink of syrupy thickness, as it otherwise spreads in writing.

Directions.—Write with a quill pen on the smooth linen surface. Do not heat, but allow the linen to hang in the air for at least forty-eight hours before it is sent to the wash.

As the above method of making the ink is somewhat wasteful, the following alternative process is suggested:—

Dissolve pure copper chloride ʒiiss. in as much water and add aniline oil ʒxviij. and pure hydrochloric acid ʒxiiss. Heat to boiling, and when it has cooled slightly, mix with it gradually, so that the reaction will be moderated, pure hydrochloric acid ʒv., stirring constantly. In as careful a manner add a solution of pure potassium bichromate ʒv. in hot water ʒviiss. and pure hydrochloric acid ʒx. When reaction has ceased, heat the mixture carefully until a bitter-almond odour is given off, and a drop of the mixture placed on a glass plate is first of a red-violet and changes in the air to a greenish colour. The ink is now ready, and should be filtered through paper and bottled.

This ink must not be used with a metal pen, but with a quill or rubber stamp. It marks a dark-green colour which, after a short exposure to the air and washing with soap and water, becomes a deep black. Bayer, in 1880, patented an aniline marking-ink which was made by adding gradually to 1 part of ortho-nitro-phenyl-propionic acid a mixture of gum-water 10 parts, sodium carbonate 2 parts, and milk sugar 1 part. A hot iron is passed over the writing done with this ink.

Red Marking-inks

1

To a saturated solution of eosin in water add as much water-glass as will make the ink thick enough to flow freely from the pen. On writing with this ink and allowing to remain for several days the dye is mordanted to the fibre by means of the silicate. Water-glass also mordants cochineal solutions in the same way.

II

(1)

Stannous chloride . .	gr. xv.
Acacia mucilage . .	ʒss.
Distilled water to . .	ʒiij.

Dissolve the chloride in 2 oz. of water, add the mucilage, and make up.

(2)

Chloride of gold and sodium . . .	gr. xv.
Powdered acacia . .	gr. xv.
Distilled water . .	ʒiiss.

Dissolve.

The fabric is damped with No. 1 solution (the mordant) and dried with a polishing-iron. The writing is then done with No. 2 (the ink). The writing is reddish purple in colour.

The juice of the banana and of the marking-nut (*Anacardium occidentale*) have been suggested as marking-inks, but no practical method of preparing them for sale appears to have been made known.

Langbeck, in 1882, proposed to use albumen as a fixer for coloured marking-inks, using a hot iron to set it in the fabric; and Hickisson has patented a basis of indiarubber and gutta-percha. In both cases pigments (*e.g.*, vermilion and ultramarine) were used as the colour-agents.

Marking-ink Pencils are in demand, but are not quite satisfactory. The oldest form is a mixture of silver nitrate 2 parts, clay or earth 7 parts, and blacklead or other colour 1 part. This is pressed into shape for pencils, and when the latter are used the fabric is first damped with water, the writing done, then ironed. Patents by Hickisson (1884) call for a mordant at one end of the pencil, made of pyrogallol 1, dried borax 1, and wax or hard paraffin 3, the ink end of the pencil being filled with a fused mixture of silver nitrate 8 and nitre 2. 'Thio-benzyl' colours, mixed with acacia, tragacanth, sugar, and china clay, also form the subject of a British patent for marking-ink pencils (No. 18950) taken out by Mr. A. Roberts in 1898.

MISCELLANEOUS INKS

Cyclostyle-ink is a variety of Printer's Ink, which is made by mixing boiled linseed oil 100, rosin 50, dry soap 6, and drying-oil 10 with pigment. The compounding-process involves boiling the oil until it approaches the igniting-point, the rosin and soap being added to it. The pigment is ground in a mill with the drying-oil, and the boiled mixture gradually added to it. Lampblack is used for black ink (preferably with

a dash of blue), Prussian blue or indigo for blue, and other paint-pigments for other colours.

Draft-ink, used by bankers and others for writing in white letters upon coloured paper, is a solution of potash or soda. It may be made extemporaneously in the following manner :— Washing-soda ℥ij., slaked lime ℥j., boiling water ℥x. Dissolve the soda in the water, add the lime, stir well, and when cold decant the clear solution.

Etching-ink

Fluoride of ammonium . ʒij.
Sulphate of barium . . ʒij.

Reduce to fine powder in a mortar, then transfer to a lead dish and make into a thin writing-cream with hydrofluoric acid. (Some prefer to use fuming sulphuric acid.) Use a piece of lead to stir the mixture.

The ink may be put up in bottles coated with paraffin, which can be done by heating the bottle, pouring in some melted paraffin, and letting it flow all round.

The writing is done with a quill, and in about half a minute the ink is washed off.

Inks for Writing on Glass

Blue

Bleached shellac . . ʒj.
Venice turpentine . . ʒss.
Spirit of turpentine . . ʒiiss.

Dissolve by a gentle heat and add

Finely powdered indigo . ʒss.

Mix.

Any other insoluble colouring matter may be used in place of the indigo—lampblack and vermilion, for example.

Instead of a varnish basis, one of diluted water-glass may be used, with aniline colours for the tints.

Evanescent and Invisible Inks.—Chemistry furnishes us with an immense variety of substances to select from, which by means of chemical or physical change may be made to appear or disappear. The latter are usually weak solutions of iodine. Some time ago Professor Braylants, of Louvain, discovered that if one lay several sheets of note-paper on each other, and write on the uppermost with a pencil, then select one of the under-sheets on which no marks of the writing are visible, and expose this sheet to the vapour of iodine for a few minutes, it turns yellowish, and the writing appears of a violet-brown colour. The explanation is that note-paper contains starch, which under pressure becomes hydrated, and turns blue with the iodine. But the writing fades slowly. In former editions we gave a traditional formula for evanescent ink containing 2½ gr. of iodine per oz. We have before us a specimen of writing done with this which is still a watery

black after a year. This will not do for lovers who fear breach-of-promise actions. What they need is the ink made by boiling 30 gr. of arrowroot in 10 oz. of distilled water for ten minutes, filtering when cold, and adding 5 drops of tincture of iodine. A quill pen is employed. Pure rag paper (rarely used nowadays) is best for writing on.

Invisible or sympathetic inks are a more numerous class than the evanescent or fugitive, and we mention the more important. During the first Afghan war rice-water was used as invisible ink, and correspondence between the Government of India and Jelalabad was established by its use. The letter was concealed in a quill. On opening it a small paper was unfolded, on which appeared the single word 'iodine.' That magic liquid was applied, and thereupon appeared an important despatch from Sir Robert Sale.

Turpin, the French chemist who, a few years ago, saw the inside of a prison for his melenite revelations, kept up a secret correspondence with a friend, using invisible ink. This was discovered, and led to an official inquiry, when some strange revelations were made by some of the convicts—as, for example, the use of milk as invisible ink. Thus when information has to be conveyed to a prisoner, a letter, containing apparently only personal items, is forwarded to the prison, read by the governor, and handed to the prisoner. The latter rubs his dirty finger between the visible lines, when a secret communication makes its appearance. Writing done with solution of quinine hydrochloride can be photographed, but cannot otherwise be seen by the eye of man.

Some inks give writing which only becomes visible on heating, others require the writing to be wetted with a reagent; and it is obvious that the latter must be in the possession of the person who receives the letter.

I

Chloride of nickel . .	gr. x.
Chloride of cobalt . .	gr. x.
Distilled water . .	℥j.

Dissolve.

The writing becomes green on heating.

II

Acetate of lead . .	ʒss.
Distilled water . .	℥j.

Dissolve.

The writing is invisible, and becomes black when damped with a sulphide solution.

III

Chloride of cobalt	ʒj.
Acacia mucilage	ʒj.
Distilled water	ʒj.

Dissolve.

The writing becomes blue when the paper is heated, and disappears again on cooling.

IV

Oxalomolybdic acid [1]	gr. xv.
Distilled water	ʒj.

Dissolve.

Write with this in a dull light. The writing appears blue when exposed to the sunshine. When wetted the blue changes to black.

These will serve to show how invisible inks are made. The cobalt inks have been used for two centuries, and are the most satisfactory. No. II. should be especially rich in suggestion to chemists. For instance, write with solution of tannin or potassium ferrocyanide, and brush the writing with tr. ferri perchlor. The result is excellent. Writing made with solution of magnesium platinocyanide is pink when damp, and disappears when heated. In this way, if cobalt-chloride characters are on the same paper, question and answer can be got by heating the paper. With sulphuric acid (1-17) characters carbonise on heating, and do not disappear again like cobalt. 'Oracle Ink' is a saturated solution of nitre used by means of rubber type on unglazed paper previously perfumed with gums or cascarilla. On touching the printed-on part with a lighted match, it goes off like touchwood, leaving the carbonised paper in the midst of the unscorched part.

Lithographic Ink

Yellow wax	ʒx.
Shellac	ʒviij.
Mastic	ʒv.
Tallow	ʒiv.
Yellow soap	ʒiv.
Venice turpentine	ʒss.

Melt together, and add gradually and with constant stirring

Lampblack	ʒiiss.

Pour into moulds to form cakes of a suitable size. The resins and tallow are sometimes omitted.

When required a little of this cake is emulsified by the addition of boiling water, rubbing it down well.

Photographic Ink

(*For writing on prints*)

Iodine	gr. x.
Iodide of potassium	℈v.
Mucilage of acacia	♏xx.
Water to	ʒvj.

Dissolve.

Write with this on a dark portion of the print. The result is that the silver on the written part is bleached by being converted into iodide.

[1] Made by dissolving molybdic acid to saturation in a hot solution of oxalic acid and collecting the crystals on cooling.

Stamp-inks may be divided into three classes: first, those made with mineral colours and an oily basis; secondly, those containing aniline-colours dissolved in oil; and, thirdly, aniline-inks made with glycerine for indiarubber stamps, oil being unsuitable.

Oily Stamp-inks

Blue

I

Ultramarine	ʒv.
Olive oil	ʒxvj.

Reduce the ultramarine to an impalpable powder, and mix with the olive oil.

II

Paris blue	ʒj.
Ultramarine	ʒss.
Olive oil	ʒix.

Mix the solids, and when reduced to an impalpable powder gradually add the olive oil with constant stirring.

Green

Verdigris	ʒvj.
Oleic acid	ʒj.
Olive oil	ʒviij.

Rub the verdigris to very fine powder, mix the oleic acid with it, and, after a few minutes, the olive oil.

Red

Vermilion	ʒiij.
Olive oil	ʒv.

Prepare as above.

Black

Gas-black	ʒiss.
Olive oil	ʒix.

Prepare as above.

All these inks should be well shaken before pouring on the pad. Heavy petroleum oil may be used instead of olive oil, or a mixture of linseed oil (1) and olive oil (9).

Oily Aniline Inks

Red

Oil-soluble Bordeaux-red aniline	ʒiss.
Oil-soluble scarlet aniline	ʒiss.
Crude oleic acid	ʒv.
Castor oil to	ʒxvj.

Rub the aniline-colours very fine with the oleic acid, then add the castor oil, and warm the whole gently, stirring all the time, until it reaches a temperature of 40° C., at which continue to heat until solution is effected.

The following are prepared in the same way:—

Blue

Oil-soluble aniline-blue	ʒiij.
Crude oleic acid	ʒvj.
Castor oil to	ʒxvj.

Violet

Oil-soluble aniline-violet	ʒiij.
Crude oleic acid	ʒv.
Castor oil to	ʒxvj.

Blue-black

Oil-soluble aniline-black	ʒv.
Crude oleic acid	ʒvj.
Castor oil to	ʒxvj.

Green

Oil-soluble aniline-blue	ʒiiss.
Oil-soluble aniline citron-yellow	ʒiss.
Crude oleic acid	ʒv.
Castor oil to	ʒxvj.

In place of castor oil the linseed and olive-oil mixture may be used.

Glycerine Stamp-inks

Aniline water-blue B	ʒiij.
Distilled water	ʒx.
Acetic acid	ʒij.
Rectified spirit	ʒiss.
Glycerine to	ʒx.

Make a solution by rubbing in a mortar.

In the same way, and with the same compound menstruum, are prepared the following colours:—

Violet.—Methyl-violet 3 B	ʒij.
Red.—Diamond fuchsin I	ʒij.
Green.—Aniline-green D	ʒiv.
Brown.—Vesuvin B	ʒv.
Black.—Deep black E	ʒiij.

For bright red omit the acid from the solution, replacing it by water, and using ʒiij. of eosin BB N. These formulas are after Dieterich, and are the best we have seen.

Stencil-inks

I

The Basis

Shellac	ʒiv.
Borax	ʒiij.
Water	ʒxx.

Boil together until 20 oz. of solution is obtained.

The Colourings

A

Drop black	ʒij.
Powdered acacia	ʒij.

Mix thoroughly, and gradually incorporate the basis.

B

Venetian red	ʒij.
Powdered acacia	ʒij.

Mix with the basis as in *A*.

C

Prussian blue	ʒij.
China clay	ʒj.
Powdered acacia	ʒj.

Mix as above.

II. Water Black

Logwood	ʒj.
Bruised galls	ʒvj.
Water	Oiij.

Boil until the decoction is reduced to 3 pints, strain, and add to the liquor

Vinegar	ʒij.
Copperas	ʒij.
Alum	ʒij.
Dextrin	ʒx.

Mix.

III. Varnish Black

Asphalt	lb. j.
Venice turpentine	lb. j.
Lampblack	ʒiv.
Spirit of turpentine	Oiij.

Dissolve the first two in the spirit, strain, and add the lampblack.

Ticket-writing Inks are ordinary writing-inks thickened with gum arabic or water-glass or a borax solution of shellac; the two latter do not run after they dry.

Typewriter-ribbon Inks are almost the same as glycerine stamp-inks, except that equal parts of glycerine and 90-per-cent. alcohol are used, as in the foregoing formulas, but without acid. Another solvent for the aniline colours is a mixture of soft soap 1, glycerine 4, water 12, and 90-per-cent. alcohol 24. An ink which is said to be equally good for

ribbons and indiarubber stamps (and is substantially Higgins's process for type-ribbon ink) consists of 2 parts of castor oil with 1 part of creosote or carbolic acid and 1 part of oil of cassia, 1 part of any of the oil-soluble aniline-colours being added to the mixture. The aniline inks on p. 466 are also used. For indiarubber stamps 4 parts of castor oil are recommended, but oily inks should not be used for indiarubber stamps, glycerine inks being preferable.

Inks for Metallic Surfaces

For Zinc and Copper

Verdigris	ʒj.
Sal ammoniac	ʒj.
Lampblack	ʒss.
Acacia mucilage	ʒss.
Water	ʒviij.

Mix thoroughly and write with a quill.

For Zinc and Tin

Chloride of potassium	ʒiij.
Sulphate of copper	ʒvj.
Distilled water	ʒix.

Dissolve and mix with the following solution :—

Resorcin-blue M	gr. iij.
Acetic acid	ʒj.
Distilled water	ʒv.

May be used with a steel pen.

For Iron and Brass

Sulphate of copper	ʒij.
Vinegar	ʒss.
Lampblack	ʒss.
Acacia mucilage	ʒij.
Water to	ʒj.

Dissolve and mix.

For Zinc

(1) Liq. antim. chlorid., B.P.

(2) Platinum chloride gr. v., distilled water ʒj. Writes black and does not wash off. This is commonly known as 'horticultural ink.'

To Write on Silver

Use a solution of platinic chloride, expose to the fumes of ammonia, and dry with sawdust.

A weak spirit-varnish (1 of shellac in 10, filtered) with lampblack or other pigment is also good for sheet tin.

Gold and Silver Inks are made by triturating the powdered metal (or suitable alloys thereof, such as Dutch metal for gold, and silver bronze with zinc oxide for silver) with water made sufficiently viscous with acacia mucilage or water-glass.

Ink for Celluloid.—The fluid basis is a mixture of albumen 12, glycerine 1, and water 10. Two parts of this go to one part of pigment. After the written or printed matter on the celluloid is dry, the article is heated to 80° C. to coagulate the albumen and so fix it to the surface.

VARNISHES, POLISHES, AND STAINS

Summary.—Resins Used in Varnish-making and their Treatment—Varnishes Made by 'Gum-running'—Spirit-varnishes—Polishes—Lacquers—Wood-stains—Luminous Paints.

VARNISHES may be divided into two groups—(A) those in which the solids must be specially treated before they are acted upon by solvents, and (B) those made from solids which dissolve naturally in spirit or similar liquids. The first class is the more important, for it includes most of the varnishes used by painters, coachbuilders, and other tradesmen, which are only made by experts; while the second class includes those which most druggists generally manufacture.

The characters of the resins used in making varnishes determine the quality of the product. By far the larger proportion of natural resins are directly soluble in alcohol and ether, and most of these also dissolve in oil of turpentine and certain petroleum and coal-tar distillates; but there are a few resins which are extremely refractory towards solvents of all kinds until they have been fused by heat. It is these latter—viz., amber, animi, copal, and kauri—which make the most durable varnishes. Two at least of these are fossil resins (amber and kauri), and the best animi is also fossilised. The botanical source of Amber Resin is not accurately known. Probably no single tree yielded what is now dug up in the coasts of Northern Europe and North America. The best of it is not used for making varnishes, but for other purposes which are well known. It is the smaller pieces and turnings which are used in varnish-manufacture, and that to an extent which is only limited by the supply. The resin is practically insoluble

in most liquids. When carefully heated to a temperature slightly over 600° F., amber undergoes change, and becomes soluble in hot oil of turpentine, petroleum spirit, benzine, linseed oil, ether, and chloroform, but still remains refractory towards alcohol. This change by heating is very important in the varnish-maker's art, and when the process is carried out technically it requires great care and much experience. The process is called 'gum-running.' It is performed in a copper pan (similar to a steam-pan, but sometimes flat instead of spherical), to the top of which is riveted a copper cylinder three times as high as the pan is deep. In heating this pan (or gum-pot, as it is called) it is placed upon wheels, so that in the event of the resin firing the pot may be drawn out of the factory. Generally the factory floors have a series of rails sunk in them upon which the wheels run, and at intervals in the floors are holes in which are the furnaces to heat the pots. A hood is used to cover the pot, as much inflammable vapour is given off during the 'running,' and it is necessary to carry it away. The pots are made to 'run' from 7 to 50 lbs. of resin at a time, the capacity of the pot being about twenty times greater than the amount of resin to be 'run' in it. The process consists in putting the resin in small pieces into the pot, and stirring while it melts. Then it begins to boil and froth, owing to the escape of some volatile constituents. While this frothing goes on the pot has to be watched with the greatest care, and if there is the slightest prospect of it running over, the pot is drawn off the fire, and the froth beaten until it subsides. The pot is now returned, and the heat carefully continued until frothing ceases altogether, at which point the resin is ready to mix with the other ingredients of the varnish in the manner to be described.

While the resin is undergoing the 'running' process the oily solvent for it is prepared. This solvent is linseed oil, which is boiled in a pot similar to that already described. When linseed oil is heated it begins to boil at 266° F.; the temperature soon rises to 482° F., and keeps between that and 554° F., the oil losing one-twelfth of its weight. For varnish-

making it should not be allowed to rise much above 500° F. It becomes viscous, but does not solidify unless the temperature is allowed to go beyond 600° F. When the resin reaches the proper point, the quantity of linseed oil prescribed for it is poured into the gum-pot, and the oil and resin thoroughly mixed by stirring. This mixture has also to undergo the 'running' process, a capacious iron kettle, called the 'set-pot,' being used for the purpose. The 'run' has to be made with the same precautions as before, and the heat continued until the mixture becomes stringy. This takes from one to five hours at a temperature of 500° F., according to the resin used. When this is done, the set-pot is removed from the fire and placed remote from it, as the stringy mixture has to be thinned with oil of turpentine, after it cools a bit, but before it sets. This mixing must be done very carefully in order to prevent accidents. When it is finished the varnish is stored for at least six months, to allow it to mature. The best varnishes are not sent out less than two years after they are made.

When ethereal solvents are to be used in making varnishes from such resins, only the first 'running' is made, and when the 'running' is complete the resin is poured out upon a cold stone surface, the mass allowed to cool, and the resin afterwards ground. The powdered material is then treated with the solvent by cold maceration. The so-called insoluble resins become soluble without loss when heated under pressure. See *The Chemist and Druggist*, 1901, II., 770.

Amber, from its comparatively high price and inadequate supply, is of less importance to the varnish-maker than animi, or African copal. This is a fossil resin, and may conveniently be mentioned along with other copals which come into the market. The following table gives the commercial names of the various resins, their botanical sources (where known) and melting-points. The last-mentioned figures determine the quality of the resins for varnish-making, as the higher the melting-point the better the resin. The figures are those of M. Bottler. On p. 476 is another table, which

shows the solubility of various resins in several common oily solvents.

Table Showing the Chief Properties of Varnish-resins

Commercial Name	Botanical Source	Melting-point		Specific Gravity
		deg. C.	deg. F.	
Zanzibar copal (or animi)	Trachylobium Hornemannium . .	275	527	1·0621
Red Angola copal .	Copaifera? . .	315	599	1·068
White Angola copal .	Copaifera? . .	245	473	1·035
Pebbly copal . .	Copaifera? . .	230	446	1·067
Sierra Leone copal .	Copaifera Guibourtiana . . .	195	383	1·064
Congo copal. . .		190	374	1·048
White Benguela copal.	Copaifera? . .	185	365	1·0593
Yellow Benguela copal	Copaifera? . .	180	356	1·065
Kauri gum . . .	Dammara australis .	150	302	1·0456
Yellow Manila copal [Indian copal, white dammar]	Vateria indica . .	145	293	1·069
American copal . .	Hymenæa Courbaril	90–95	194–203	1·068–1·070

It should be understood that semi-fossilised copals are not fusible in the ordinary sense of the word, for they require to be kept at these high temperatures for a considerable time before they become liquefied by the heavy oily products of their own decomposition. When once melted, copal and its congeners are completely changed. They dissolve readily, as has been said, and mix easily with linseed oil, but they are much less hard than in their original condition, and are darker in colour. It follows from this statement that the above melting-points will vary with the conditions of fusion: if heated in a closed vessel, the quicker will the resins melt. Zanzibar copal has been found which melts as high as 370° C. (698° F.).

There is considerable doubt as to the botanical origins of copal resins, but the balance of belief in regard to the African mainland copals is that they are derived from species of *Copaifera*. Of the American copals, the Brazilian or South American is best known, and is obtained from *Hymenæa Courbaril*. There are two sorts of it—the one with the higher melting-point being dug out of the earth, and the other being recently collected from the trees. The same tree is supposed

to yield West Indian copal, but that resin is really derived from *Amyris copallifera*. A copal is also obtained in the United States from *Rhus Copallina* and *Rhus leucantha*. These do not come into British commerce.

Besides the method of fusion, a process for rendering varnish-gums soluble has within the past decade been carried into practice, although not extensively, which greatly reduces the danger attendant on the manufacture of varnishes. This is to heat the powdered resins in warm air well below the temperature at which the resins melt. Prolonged and strong heating of the resins darkens them very much indeed, and therefore diminishes their value for varnish-purposes. Other modifications of the old process are to pass a current of resin-solvent vapour, such as oil of turpentine, over the powdered resin, and heat the resin and solvent together to a temperature of 212° F.; while another process is to heat the resin and solvent in an autoclave to 300° F.; but these methods are quite as difficult and risky as the old process.

VARNISHES MADE BY 'GUM-RUNNING'

Brief directions only are given under the following formulas as the varnishes are to be made according to the method already described.

Amber Varnish

Pale amber	6 lbs.
Linseed oil	2 gals.
Oil of turpentine	3½ gals.

Black Japan Varnish

I

Asphalt	50 lbs.
Animi	8 lbs.
Linseed oil	12 gals.

Run each of the 'gums' separately, and add the boiled oil to them, 10 gals. to the first, and 2 gals. to the second, and pour into the set-pot. Then run and mix

Amber	10 lbs.
Linseed oil	2 gals.

Add to the set-pot and boil three hours, then add

Red-lead	7 lbs.
Litharge	7 lbs.
Copperas	3 lbs.

Boil until it sets on cooling, and then mix with it

Oil of turpentine	30 gals.

II

Asphalt	10 lbs.

Run, and add a third of

Linseed oil	6 gals.

Previously heated in the set-pot for two hours. When mixed add the other two-thirds to the set-pot, and stir well; then add

Red-lead	2 lbs.
Litharge	2 lbs.
Copperas	1 lb.

Boil four hours, allow to stand a

day, and heat till a little of it becomes glassy on cooling. To this add

Oil of turpentine	10 gals.
	or a sufficiency

Black Enamel for Cycles

Asphalt	2 lbs.
Boiled linseed oil	1 pint
Oil of turpentine	4 pints

Mix the two oils, add the asphalt in small pieces, set aside in a warm place for a week, shaking occasionally, then decant the clear fluid.

Benzine may be used in place of turps.

Carriage-varnish

Best copal	32 lbs.
Linseed oil	10 gals.
Litharge	1 lb.
Copperas	1 lb.
Oil of turpentine	22 gals.

Run, boil, and mix in the usual manner and add (hot) to the following :—

Animi	32 lbs.
Linseed oil	8 gals.
Oil of turpentine	14 gals.

Run, boil, and mix before adding the copal mixture.

Brunswick Black

Asphalt	45 lbs.
Linseed oil	6 gals.
Litharge	6 lbs.
Oil of turpentine	25 gals.

Run the asphalt, boil the linseed oil with the litharge, mix the two, boil until hard on cooling, and add the turpentine.

Superior qualities of black enamels are now made with Chinese wood oil instead of linseed oil. Chinese wood oil has been long employed secretly in varnish manufacture. It is paler than linseed oil, dries quicker, and the coating is harder.

NOTE.—Enamelling of cycles and similar articles is done by a special process which it is impossible to imitate by brushing. Generally three coats of the enamel are applied. After the first one the article is 'fired,' then rubbed smooth with emery; a second coat is applied, and again 'fired' and rubbed; and so with a third coating —the final polish being, in some cases, done with the bare hands.

Copal Varnish

I

Copal	8 lbs.
Linseed oil	2 gals.
Oil of turpentine	5½ gals.

Run, boil, and mix in the usual way.

II

Copal	℥xxiv.
Sugar of lead	℥iv.
Camphor	℥ij.
Resin	℥ij.
Oil of turpentine	Oiv. ℥xvj.
Linseed oil	Oiij. ℥iv.

Prepare as above.

Gold-size

Copal	8 lbs.
Linseed oil	8 gals.
Oil of turpentine	12 gals.
	or a sufficiency

Run, boil, and mix.

Mahogany-varnish

Animi	8 lbs.
Linseed oil	3 gals.
Litharge	4 oz.
Sugar of lead	4 oz.
Oil of turpentine	5 gals.

Run, boil, and mix.

Oak-varnish

I

Kauri gum	8 lbs.
Linseed oil	3 gals.
Oil of turpentine	5½ gals.

Run, boil, and mix.

Made also with copal, and ¼ lb. each of litharge, sugar of lead, and copperas to the above proportions of resin and oils.

II

Yellow resin	7 lbs.
Canada balsam	2 pints
Oil of turpentine	2 gals.

Dissolve the resin in the turpentine, strain, and add the Canada balsam.

It will be seen that there is a general resemblance to each other amongst these formulas, and probably there is little variation from them in practice on the large scale, superiority and inferiority of particular brands depending upon the selection of the resinous constituents, boiling of the oil, use of driers, and maturing. Several plans are used in France instead of running. Thus, in the case of dammar, 12 oz. of the powdered resin is taken and made into a thick mixture with 10 oz. of oil of turpentine. The mixture is carefully heated until it commences to boil, when it is taken from the stove, and, with constant stirring, 5 to 10 oz. of oil of turpentine is added, the mixture again heated to boiling, allowed to cool, and strained.

The cold process is as follows :—Reduce the copal or other resin to powder, and then add gradually essential oil of spike, stirring well all the time, and occasionally until the mixture is homogeneous. If at this point turpentine is added, the copal is precipitated, which is not the case if solution is promoted by heat ; therefore the mixture should be carefully heated on a water-bath for an hour, placing a funnel in the flask and a flask full of cold water in the funnel to condense the vapours. A little turpentine oil may be added occasionally to keep the copal mixture thin. For the reasons already stated such methods as these do not produce durable varnishes ; but it is well to know how these short processes are conducted. The essential oils have a wonderful influence in breaking down refractory resins, and have been freely employed by the French for many years. Oil of spike lavender is especially useful in this respect. The following factors by Bornemann show the

solvent power of various oils upon resins commonly used in varnish-making :—

100 parts by weight of	Dissolve subjoined parts by weight of					
	Amber	C'loph'y	Copal	Damm'r	Mastic	Shellac
Cajuput oil . . .	6·53	43·70	5·52	42·49	41·16	0·66
Copaiba oil . . .	—	24·95	0·00	34·57	—	—
Camphor oil s.g. 0·910 .	9·73	46·16	9·16	34·95	35·04	1·33
Camphor oil s.g. 0·970 .	6·50	31·35	2·81	50·08	37·93	0·83
Lavender oil . . .	—	52·86	—	33·07	—	—
Clove oil . . .	—	79·79	0·00	18·27	—	—
Rosemary oil . . .	10·16	48·94	4·81	99·44	21·39	0·79
Spike-lavender oil . .	8·90	40·98	9·51	41·66	33·47	3·67
Turpentine oil . .	7·47	51·84	—	64·28	52·79	12·94
Turpentine oil rect. .	10·30	—	6·47	—	—	—

The solvent power of light camphor oil has brought it into rivalry with oil of turpentine, but the cheapness of the latter, and the rather slow evaporation of the former, have prevented the general adoption of the camphor oil.

SPIRIT-VARNISHES

Methylated spirit, acetone, amyl acetate, wood naphtha, ether, benzol, and carbon bisulphide are used as solvents for those resins which do not require to be fused in order to make them soluble. Amyl acetate is chiefly used for making celluloid or pyroxylin varnishes used in preparing Gold Paint. It is a good resin-solvent; so is amylic alcohol itself, which is also used. Acetone is not inferior in that respect, and has the great advantage over benzol of miscibility with alcohol. It is also cheap. Coal-tar benzol, or benzene, is rather heavy for varnish-purposes, better solvents being petroleum benzine (*i.e.*, petroleum ether or spirit), sp. gr. 0·725 to 0·745, which is largely used; also shale naphtha, sp. gr. 0·725 and under, which is much used in the indiarubber industry as a solvent. It is sometimes called gasolene, the corresponding distillates from petroleum being called petrol; but whatever a

solvent may be named, it suffices for the varnish-maker to know that when hydrocarbons fall under sp. gr. 0·700 they diminish in resin-dissolving power, and above sp. gr. 0·725 their volatility becomes slower. Carbon bisulphide is an excellent resin-solvent, but its bad odour practically excludes it from use.

The more common spirit-varnish resins are the various lacs, sandarac, elemi, benzoin, colophony, mastic, gamboge, dragon's-blood, and gum acroides, the last three as colouring agents. Besides these, other resins and terebinthinous products are used. By far the most important of the group are the lacs, produced in India and other Asiatic countries through the puncture of an insect (the female *Coccus lacca*) on the branches of various trees, including several species of *Ficus*, *Butea frondosa*, *Schleichera trijuga*, &c. The crude lac is known as sticklac, and occasionally comes into the market. It contains the formerly well-known lac-dye and the varnish-resin. To prepare the latter, the lac is coarsely ground and repeatedly treated with water, which dissolves the colouring-matter, and the residue, after drying, forms seed lac. From this shellac, garnet lac, and button lac are prepared by the simple process of heating and straining—the liquid resin, in the case of shellac, being spread on plantain-leaves, cooled, and removed. The other kinds are the same thing poured on plates. Shellac when pure contains 90 per cent. or more of spirit-soluble resin and 4 per cent. of wax, with colouring-matter, &c. Comparatively little comes into the market which does not contain colophony to the extent of 5 per cent. and upwards. The other varieties of lac resins contain a larger proportion of non-resinous matters. It is to the wax of shellac that the cloudy appearance of its alcoholic solutions is due. Varnishes containing shellac may be filtered without impairing their properties, but not so polishes, as the wax is of material advantage in polishing. Sandarac, or gum juniper, is a coniferous resin exuded by the North African tree *Callitris quadrivalvis*. It dissolves to the extent of 90 per cent. (sometimes more) in methylated spirit, and is an excellent adjunct to shellac, giving lustre. Elemi generally comes into the market

in the soft oleo-resinous state. There are several kinds of it, but the Manila variety (from *Canarium commune*) is most esteemed. It is used chiefly for white varnishes, giving them a pleasant odour, and imparting toughness to the varnish film. Mastic makes an exceedingly durable varnish, but when used alone it cracks ; the latter characteristic is particularly marked in colophony varnishes. Here it may be noted that colophony is referred to in the formulas as 'resin.' Benzoin is used solely for imparting odour, but from its constitution it is probable that it helps to bring about those chemical changes which give permanence to the varnish film.

In making spirit-varnishes the solids, preferably in coarse powder and mixed with their own weight of coarsely ground glass, are shaken with the spirit occasionally until dissolved. On the large scale the resins and solvent are continuously churned with a mechanical agitator. There is no reason why a batch of varnish should not be made in the course of a day, but drug-trade custom gives a week to the varnish-jar as well as to the tincture-maceration bottle. Obviously, however, the way to get the resin into solution, and prevent it forming an agglutinated lump, is to give it a vigorous shake or stir now and then.

By 'spirit' in the formulas, industrial methylated spirit 64° o.p. is meant, and permission to use this in varnish-making in the United Kingdom must be obtained from the Board of Customs and Excise. (*See* Appendix.) Rectified spirit of similar strength may be used, if the price of it is not prohibitive.

Basket-varnish

Shellac	℥viij.
Resin	℥j.
Benzoin	℥ss.
Bismarck brown	℥ij.
Spirit	℥xxx.
Wood naphtha	℥x.

Dissolve and strain.

Bookbinders' Varnish

Resin	3 lbs.
Seedlac	12 oz.
Spirit	2 gals.

Dissolve, add kaolin 4 oz., shake, and strain.

Bottle-cap Varnish

I

Shellac	℥x.
Guttapercha	℥j.
Venice turpentine	℥j.

Melt together, mixing well, and pour on a stone slab. When cold powder and macerate in

Spirit . . . . Oiij.

Dissolve and strain through cotton-wool.

II

Dissolve 2 oz. of odd bits of red sealing-wax in 5 oz. of spirit.

Black Varnish

I

Black sealing-wax	℥v.
Spirit	℥xij.

Dissolve.

Upon this principle varnishes may be made from other colours of sealing-wax.

II

Shellac	℥xij.
Resin	℥viij.
Lampblack	℥iss.
Spirit	Oiij.

Dissolve the resins in the spirit, strain, and add the lampblack.

Celluloid Varnish

I

Celluloid parings	℥j.
Acetone	℥x.
Amyl acetate	℥x.

Dissolve.

More or less of the solvents may be used according to the purpose for which the varnish is required.

II

Pyroxylin	℥j.
Ether	℥vj.
Spirit	℥viij.

Dissolve and add

Camphor	ʒiiss.

Dissolve.

The first is the better varnish, especially for making gold paint.

Caoutchouc Varnish

Caoutchouc	℥xij.
Oil of caoutchouc	℥xxv.
Benzol	℥xxv.
Oil of turpentine	℥xviij.
Resin	℥v.
Mastic	℥v.
Asphalt	℥x.
Chloroform	℥v.

Cut the caoutchouc into small pieces and digest in a still with reflux condenser for twenty-four hours; then add the benzol and turpentine, continuing to heat until solution is effected. Melt the resin, mastic, and asphalt together, mixing well, and add to the contents of the still. Dissolve, and add the chloroform when cold.

Crystal Varnish for Maps, &c.

The best crystal varnish is made with Canada balsam and sufficient turpentine to bring the varnish to a proper consistence for the purpose for which it is required. Another good varnish is

Mastic	2½ lbs.
Dammar	1 lb.
Oil of turpentine	1 gal.

Dissolve.

If the resins be melted together, cooled, and powdered before treatment with the turpentine, a better solution is obtained. *See also* Label-varnish.

Ebony Varnish

Shellac	3 lbs.
Spirit	2 gals.

Dissolve, strain, and add gradually to 4 oz. brilliant spirit-black. Mix well.

Ethereal Amber Varnish

Amber	℥xv.
Resin	℥x.

Melt together and mix. When cold break up and dissolve in

Spirit	℥xxx.
Ether	℥xxvj.

Filter through cotton-wool.

Furniture-varnish

A shellac-and-resin varnish, such as No. 1 spirit-varnish.

Knotting-varnish

Shellac	1 lb.
Sandarac	3 oz.
Spirit	3 pints

Dissolve and strain.

Label-varnish

I

Canada balsam	℥v.
Oil of turpentine	℥v.

Mix.

II

White shellac	℥j.
Carbonate of lead	℥ss.
Ether	℥viij.

Dissolve the shellac in the ether, add the carbonate of lead, shake, and filter clear.

III

Sandarac	℥v.
Mastic	℥ij.
Camphor	℥j.
Oil of lavender	℥j.
Venice turpentine	℥ij.
Ether	℥ij.
Spirit	℥xij.

Dissolve by a week's maceration.

Labels should be sized and allowed to dry before varnishing.

Varnish for Gold Labels

Sandarac	℥iij.
Mastic	℥j.
Canada balsam	℥j.
Spirit	℥xvij.

Dissolve and strain.

See also Paper-varnish.

Leather-varnish

Sandarac	℥j.
Mastic	℥j.
Garnet lac	℥iv.
Resin	℥ij.
Venice turpentine	℥j.
Spirit	℥xxviij.

Dissolve, strain through cotton-wool, and mix gradually with 1 oz. of fine lampblack or 2 oz. of alcoholic solution of nigrosin.

Mahogany-varnish

I

To each gallon of shellac spirit-varnish add ½ oz. Bismarck brown B and a trace of aniline-black, or use 1 oz. of dragon's-blood with each pound of shellac.

II

Dragon's-blood	℥vj.
Red wood-stain	℥vj.
Spirit-varnish	Oij.

Macerate four days and filter.

Mastic Varnish

Mastic	℥vj.
Oil of turpentine	℥xv.

Dissolve.

To make good mastic varnish care is required in every part of the process—in picking the gum, in dissolving it, and, above all, in filtering the varnish. The longer mastic varnish is kept the better, as it becomes tougher and less apt to chill or bloom. It matures in from six to twelve months.

Paper-varnish

African copal	℥iv.
Powdered glass	℥iv.
Camphor	℥j.
Ether	℥xx.

Macerate for a month, then add

Absolute alcohol	℥v.

Again macerate for two weeks, and decant the clear varnish.

Parisian Varnish

White

Dammar	℥iij.
Sandarac	℥vj.
Mastic	℥ij.
Venice turpentine	℥j.
Camphor	℥ij.
Oil of lavender	℥j.
Spirit	℥xxvj.

Powder the first three resins, and digest in the spirit at a temperature of 100° F. for three days, shaking frequently, then heat on a water-bath until most of the resins is dissolved, add the other ingredients, and strain through cotton-wool. The product should measure 36 oz.

Red

To the foregoing add

Dragon's-blood	ʒj.
Saffron	ʒj.
Spirit	ʒij.

Picture-varnish

Mastic	ʒxij.
Venice turpentine	ʒiiss.
Camphor	ʒss.
Oil of turpentine	Oij.

Dissolve and strain.

Satinwood-varnish

Provence rose (B. S. & S.)	ʒij.
Spirit-varnish	Cong. j.

Dissolve.

Slake-varnish

Sumatra benzoin	ʒvss.
Sandarac	ʒij.
Spirit	ʒxx.

Dissolve, decant, and filter.

Sandarac is sometimes omitted.

Spindle-varnish

Sandarac	ʒiv.
Resin	ʒiij.
Spirit	ʒxx.

Dissolve and strain.

Spirit-varnish

I

Shellac	ʒxvij.
Sandarac	ʒij.
Yellow resin	ʒiiss.
Spirit	Oiv.

Dissolve and strain.

II

Shellac	ʒxvj.
Sandarac	ʒj.
Gum thus	ʒvj.
Spirit	Oij. ʒxiv.

Dissolve and strain.

III. Dark

Shellac	ʒiv.
Black pitch	ʒj.
Spirit	ʒxvj.

To make one pint.

IV. Red

Shellac	ʒxvj.
Sandarac	ʒx.
Elemi	ʒiv.
Dragon's-blood	ʒiv.
Spirit	Cong. j.

Macerate for a week and strain.

V. White

Mastic	ʒxviij.
Sandarac	lb. ivss.
Resin	lb. ss.
Spirit	Cong. ij.

Dissolve and strain.

Straw-hat Varnish

Shellac and resin spirit-varnish coloured with aniline-dye of the desired colour.

Transfer-varnish

Mastic	ʒiiss.
Sandarac	ʒss.
Canada balsam	ʒss.
Spirit	ʒv.

Dissolve.

Turpentine Varnish

Resin	4 lbs.
Oil of turpentine	1 gal.

Dissolve and strain.

Violin-varnish

Sandarac	ʒiss.
Shellac	ʒvj.
Mastic	ʒvj.
Elemi	ʒiij.
Spirit	ʒxx.

Dissolve by shaking, then warm and add

Venice turpentine	ʒvj.

Dissolve, allow to stand until clear, and decant the clear portion.

NOTE.—The tone of violins greatly depends upon the varnish used, but the composition of the varnishes has remained a secret of the makers. Cremona violins are supposed to have been treated with a varnish containing Chinese wood oil. The

foregoing formula is a good one for common violins.

Varnish for Damp Walls

Melt together 30 oz. of common resin, 2 oz. of slaked lime, and 1 oz. of powdered turmeric. Pour out on a cold slab, and when cold grind it and dissolve in a mixture of pinolin (resin spirit) 12½ oz., cod-liver oil 5 oz., oil of turpentine 7 oz., and 5 oz. of caoutchouc solution. Decant, and to the clear solution add 10 oz. of 4-per-cent. soda solution (s.g. 1·056); mix well, and strain through a wire sieve.

Walnut-varnish

I

Shellac	1½ lb.
Bismarck brown B	1 oz.
Nigrosin	½ oz.
Spirit	1 gal.

Dissolve.

II

Aniline-green	ʒij.
Provence rose	ʒj.
Nigrosin	ʒij.
Scarlet	ʒiij.
Spirit-varnish	Oij.

Dissolve.

POLISHES

These are thin varnishes, and are invariably made with spirit. Some of them, as in the case of brush-polish, are very lightly rubbed, and are not used along with oil and spirit, which is essential in French-polishing. Although it requires much experience to master the latter art, an amateur can easily acquire enough skill to make a great improvement in old and worn pieces of furniture. The requisites are polish, linseed oil, methylated spirit, a piece of rag, and a rubber made by winding list or a strip of old flannel into a roll, three or four inches in diameter and an inch or two long; this is tied round with string and put in the middle of a cloth, the ends of the latter being gathered up and tied to form a convenient handle. The furniture is carefully washed with soap and water and thoroughly dried; any very bad scratches may be smoothed a little with fine glass-paper. All dust and moisture having been removed, the mouth of the bottle of French polish is placed against the middle of the rubber and well shaken to saturate the latter for some depth. The rag is moistened with the linseed oil and just touched against the middle of the rubber, and polishing is then begun. It is best to try a flat surface first. Begin with a circular motion (always in the same direction), keeping to one part a few inches square till the surface is satisfactory. If the rubber sticks,

just touch it with spirit and the oily rag. When one part is finished begin on the next.

Brush-polish

I

Shellac	℥viij.
Benzoin	℥iij.
Resin	℥iij.
Spirit	Oij.

Dissolve.

II

Shellac	℥xviij.
Sandarac	℥ij.
Mastic	℥iss.
Spirit	Oiij.

Dissolve.

III

Shellac	℥xiv.
Resin	℥ij.
French polish	Ov.

Dissolve and strain.

French Polish

I

Shellac	℥xx.
Mastic	℥iij.
Sandarac	℥vj.
Elemi	℥ss.
Spirit	Cong. j.

Dissolve and strain.

Stands the addition of another ½ gal. of spirit.

II

Shellac	℥xvj.
Benzoin	℥ss.
Sandarac	℥j.
Spirit	Oiv.

Dissolve and strain.

III

Shellac	℥xij.
Gum thus	℥ij.
Sandarac	℥iij.
Oxalic acid	℥iij.
Spirit	Oiv.

Dissolve and strain.

Colourless French Polish

White shellac	℥iv.
Sandarac	℥j.
Sand	℥iv.
Spirit	Oj.

Powder the resins, mix with the sand, and dissolve in the spirit. Decant the clear portion, and filter the remainder.

Straw-hat Polish

Orange shellac	3 lbs.
Powdered resin	1 lb.
Benzoin	3 oz.
Spirit	1 gal.

Mix and stir occasionally in the course of a few days until dissolved. Strain and add 1 oz. of spirit stain, previously dissolved in 8 oz. of spirit.

LACQUERS

Lacquers are made from a variety of formulas, but the following small selection will give some idea of what is required, and the different shades can easily be regulated by increasing or diminishing the proportions of the colouring-agents used. Lacquers should be made by agitation without heat, and after the resins are dissolved the preparation should be allowed to stand until clear, then strained. The lacquer

used by brass-finishers is a solution of 3 lbs. of seedlac in a gallon of methylated spirit. This is applied to the heated brass, and the metal is again heated to a high degree, whereby the lacquer is made practically indestructible by atmospheric agencies, and is not readily attacked by resin-solvents. Sometimes a little gamboge is added, as well as other colouring-agents, according to the tone which it is desired to impart to the surface. During the past twenty-five years spirit-soluble aniline-colours have been much employed in lacquer-making, especially for tin-box lacquers; but these preparations are really varnishes, true lacquers requiring the heating process. Lacquers should be thinner than varnishes, as a thick coating is undesirable. When a variety of tints is required, the best plan is to make the resin-and-spirit basis or lacquer (3 oz. of resins to the pint of spirit) and add to it a sufficiency of the spirituous solutions of the colours—either aniline or vegetable.

Brass Lacquer

I

Shellac	ʒiij.
Turmeric	ʒj.
Annatto	ʒij.
Saffron	ʒij.
Spirit	ʒxvj.

Make a tincture of the drugs, filter, and in the filtrate dissolve the shellac. Again filter or strain.

II

Cape aloes	3 oz.
Sandarac	4 oz.
Shellac	8 oz.
Gamboge	8 oz.
Spirit	1 gal.

Macerate for four days, and filter.

III

Rose's brass lacquer for opticians is said to be made as follows:—Dissolve by agitation without heat 4 oz. shellac and ¼ oz. gamboge in 24 oz. pyroacetic ether. Allow to settle, and decant. When required for use mix with eight times its volume of methylated spirit.

Bronze Lacquer

The following makes the colouring-solution to be added to plain lacquer in sufficient quantity:—

Diamond fuchsin	ʒj.
Hofmann's violet	ʒss.
Spirit	ʒxij.

Dissolve by the heat of a water-bath; add

Sumatra benzoin	ʒiss.

Boil for fifteen minutes or so until the solution becomes a bronze-green colour, strain through cotton-wool, and wash the strainer with spirit to make 12 oz.

Gold Lacquer

I

Powdered sandarac	ʒj.
Powdered elemi	ʒj.
Powdered seedlac	ʒj.
Powdered gamboge	ʒij.
Powdered dragon's-blood	ʒij.
Powdered glass	ʒij.

Dissolve in the subjoined solution,

prepared by macerating for twenty-four hours :—

Turmeric powder	ʒvj.
Safflower	ʒss.
Spirit	ʒxxx.

Strain.

II

Powdered turmeric	ʒviij.
Gamboge	ʒij.
Shellac	ʒviij.
Sandarac	ʒxvj.
Spirit	Cong. j.

Macerate four days, and strain.

III

Seedlac	ʒiiss.
Cutch	ʒj.
Dragon's-blood	ʒss.
Spirit	ʒxx.

Dissolve by the heat of a water-bath, and strain.

IV. Terebinthinous

Seedlac	ʒij.
Sandarac	ʒiss.
Dragon's-blood	ʒij.
Gamboge	ʒj.
Venice turpentine	ʒij.
Oil of turpentine	ʒxx.

Dissolve on the water-bath, and strain.

Plain Lacquer

Mastic	ʒj.
Sandarac	ʒj.
Elemi	ʒss.
Animi	ʒss.
Spirit	ʒxx.

Dissolve and strain.

Red Lacquer

Dragon's-blood	ʒviij.
Sandarac	ʒxvj.
Shellac	ʒviij.
Annatto	ʒxvj.
Spirit	Cong. j.

Macerate for a week, and strain.

Universal Lacquer

For wood, metal, paper, glass, &c.

Bleached shellac	ʒvj.
Copal	ʒvj.
Mastic	ʒvj.
Powdered glass	ʒxij.
Spirit	Ovj.

Macerate for fourteen days, add 1 dr. of boric acid, and filter.

Boric acid seems to give lustre to lacquers, but is really not an essential ingredient.

WOOD-STAINS

By chemical treatment, before varnishing and polishing, the natural colours of various woods are changed into much more permanent colours than by the dyes applied in aqueous or alcoholic solution. Thus, the fumes of ammonia impart to oak an old-age appearance, and green is done with malachite green ; maple takes a greenish grey stain with a weak solution of sulphate of iron, and ash an olive-green, while oak takes a bluish-green. The iron-solution should be acidified with sulphuric acid. An aqueous solution of picric acid gives most white woods a yellow colour. Formulas are given for the more important water and spirit stains.

Black or Ebony

I

Brush the wood first with a solution of sulphate of iron, and then with a decoction of logwood or galls.

II

Solution of silver nitrate (gr. x. to ℥j.). Brush with this and expose to the sun or to sulphuretted hydrogen.

Cedar

Catechu	℥ij.
Caustic potash	℥j.
Water	℥xx.

Dissolve.

Boil the wood in the solution, or apply it hot.

Cherrywood

Rad. anchusæ	gr. xv.
Aloes	℥ss.
Sang. draconis	℥ss.
Spirit.	℥xvj.

Mix, and allow to stand for some days before using.

The wood is first to be painted with dilute nitric acid (1 in 10).

Mahogany

I

Madder	2 lbs.
Logwood, ground	1 lb.
Soft water	1 gal.

Boil one hour, filter, and use while warm. The wood also should be warm. The stain may be darkened by application, after drying, of potassium-carbonate solution (1 dr. to 1 pint).

II

Dragon's-blood	℥iv.
Caustic soda	℥ij.
Water	℥x.

Boil and make up to 40 oz. with water.

III

Alkanet	℥j.
Cape aloes	℥ij.
Dragon's-blood	℥ij.
Spirit	℥xxvj.

Macerate for a week, and strain.

IV

Dissolve ½ oz. of Bismarck brown in a pint of spirit.

Oak

I

Vandyke brown	℥iiss.
Carbonate of ammonium	℥j.
Bichromate of potassium	℥ss.
Washing-soda	℥ss.
Water	Oij.

Boil for ten minutes, and strain.

II

Bismarck brown	℥ss.
Vandyke brown	℥j.
Nigrosin	℥j.
Spirit	Oij.

Dissolve.

Rosewood

I

Red sanderswood	2 lbs.
Carbonate of potassium	2 oz.
Water	4 pints

Macerate eight days, and filter.

To be applied hot. Alum solution (1 oz. to 1 pint) applied while the wood is wet brightens the colour.

II

Provence rose	℥j.
Vandyke brown	℥j.
Spirit	Oj.

Dissolve.

Yellow

Gamboge	℥iss.
Spirit	Oj.

Dissolve and strain.

Walnut

I

Permanganate of potassium	3 oz.
Sulphate of manganese	3 oz.
Hot water	1 gal.

Dissolve.

The sulphate is really unnecessary.

II

Nigrosin	℥ss.
Vandyke brown	℥ss.
Bismarck brown	℥ss.
Spirit	Oij.

Dissolve.

Dry Stains

Ebony.—Extract of logwood, 15 parts; water, 33 parts. Boil and add 1 part of ferric chloride. Evaporate to dryness, and powder.

Mahogany.—Extract of Brazil wood, 18 parts; caustic potash, 1½ part; water, 18 parts. Boil and add eosine 1 part. Evaporate to dryness.

Oak.—Cassel brown, 10 parts; caustic potash, 1 part; water, 20 parts. Boil, strain, and evaporate to dryness.

Walnut.—To the oak stain add 4 parts of extract of logwood before evaporating to dryness.

The spirit-stains for which formulas are given are much too strong to use alone, and are intended to be added to spirit-varnishes. If copal varnish is to be used, the stain should be diluted with spirit, then applied to the wood, and allowed to dry before varnishing.

Blackboard-paint

I

Shellac	℥iv.
Lampblack	℥ij.
Emery-powder	℥j.
Ultramarine	℥j
Spirit	Oij.

Dissolve the shellac in the spirit; place the lampblack, emery, and ultramarine on a cheese-cloth strainer, pour on part of the shellac solution, stirring constantly, and gradually adding the rest of the solution until all of the powders have passed through the strainer.

II

Prussian blue	equal parts
Chrome green	
Gold-size	equal parts
Spirit	

Mix the powders, and add sufficient of the liquids to make into a cream. Use a large stiff brush, and cover quickly. In an hour give it a second coat. In a day or two smooth the surface with a hair cloth.

Browning for Gun-barrels

I

Sweet spirit of nitre	℥ij.
Sulphate of iron (sat. sol.)	℥iss.
Sulphate of copper	℥ij.
Butter of antimony	℥iss.
Water	Oiij.

Mix all except the water, and after twenty-four hours add the water. Clean the polished steel with lime-water, and apply the solution. After twenty-four hours give it another application. Clean and polish with sweet oil.

II

Strong nitric acid	℥ss.
Sweet spirit of nitre	℥ss.
Methylated spirit	℥j.
Sulphate of copper	℥ij.
Tincture of perchloride of iron	℥j.
Water to	℥xxx.

Mix, and apply with a piece of

old rag, having first thoroughly cleaned the metal from all dirt, grease, &c. Allow to stand for fifteen or twenty hours, and then burnish with a hard brush. The metal should afterwards be lacquered with a thin clear lacquer.

Blueing-solution for Gun-barrels

Liq. antimon. chlorid. The process is, however, secret.

Old-bronze Solution

Bronze is an alloy of copper and tin, generally containing also a varying proportion of other metals, such as zinc, lead, &c. The colour of antique-bronze ornaments is often imparted to modern productions by the following process :—

Chloride of ammonium	ʒiiss.
Salt of sorrel	ʒj.
Dilute acetic acid	Oj.

Dissolve.

To be applied carefully with a fine camel-hair pencil in a warm room, and repeated until the proper tint is produced.

Bronzing-solution

Fuchsin	ʒj.
Aniline purple	℥ss.
Benzoic acid	℥ss.
Methylated spirit	℥x.

Dissolve the dyes in the spirit, add the acid, and boil until the liquid changes to bronze-brown.

Process for Blackening Brass

The following process will be found to work admirably, and is easy of application :—Dissolve copper foil or filings in strong nitric acid nearly to saturation, but leaving a slight excess of acid to bite the metal to be blackened. Heat the metal in a smokeless flame, and brush on the nitrate-of-copper solution exactly as in lacquering.

Colours for Copper

Brown and Black

Iron nitrate	ʒv.
Water	℥xx.

The longer the metal is kept n this, the darker it becomes.

Brown and Drab

Iron nitrate	ʒv.
Potassium sulphocyanide	ʒij.
Water	℥xx.

Bright Red

Antimony sulphide	ʒij.
Pearlash	ʒj.
Water	℥xx.

Red to Black

Sulphurated lime solution.

Steel Grey

Antimony chloride	℥ss.
Hydrochloric acid	ʒss.
Water	℥xx.

To be used at 180° F.

Hatter's Black

Logwood	1 lb.
Bichromate of potassium	½ oz.
Sulphate of iron	1 oz.
Water	1 gal.

Boil together and strain.

Steatite Varnish

This is water-glass solution, thickened with finely powdered French chalk, for the purpose of coating steam pipes or boilers.

Surgeon's Skin-varnish

Copal	2 parts
Venice turpentine	4 parts
Ether	100 parts
Collodion	100 parts
Acetone	8 parts

Dissolve the resins in the ether and acetone, strain, and add the collodion.

Luminous Paint

This is composed of impure calcium monosulphide mixed with a varnish-like medium. Balmain in 1877 took out a patent for the use of such a substance in the form of paint. The phosphorescent material was obtained by 'simply heating together a mixture of lime and sulphur—such, for example, as alabaster, gypsum, and the like—with carbon or other agent to remove a portion of the oxygen contained in them, or by heating lime or carbonate of lime in a gas or vapour containing sulphur.' The base to form a paint from the resulting phosphorescent substance was stated to be 'a colourless varnish made with mastic or other resinous body with turpentine or spirit, making the paint as thick as convenient to apply with a brush, and with as much turpentine or spirit as can be added without impairing the required adhesiveness. Good results may, however, be obtained with drying-oils, spirit-varnishes, gums, pastes, sizes, and gelatin solutions of every description.'

Balmain's phosphorescent substance is made from impure calcium monosulphide. This is obtained by heating to cherry redness for twenty minutes a mixture of finely powdered calcined oyster-shells 20 grams, sulphur 6 grams, starch 2 grams, 8 c.c. of a solution containing basic bismuth nitrate 0·55 gram, and 100 c.c. absolute alcohol acidified with a few drops of hydrochloric acid. The mixture is exposed to the air until the alcohol is evaporated. After calcination, the upper layer, consisting of calcium sulphate, is removed, and the remainder of the mass powdered and again heated for fifteen minutes.

Luminous-paint Bases

Lennard's

Strontium carbonate	100	grams
Sulphur	100	grams
Potassium chloride	0·5	gram
Sodium chloride	0·5	gram
Manganous chloride	0·4	gram

By heating the mixture for three-quarters of an hour at about 1,300° C. a product is obtained which emits a fine golden-yellow light.

Mourelo's

Strontium carbonate	100	grams
Sulphur	30	grams
Sodium carbonate	2	grams
Sodium chloride	0·5	gram
Manganous sulphate	0·2	gram

This mass emits a bright-yellow light.

Vanino's

Strontium thiosulphate	60 grams
Bismuth nitrate (0·5-per-cent. solution in acidified alcohol)	12 c.c.
Uranium nitrate (0·5-per-cent. solution in alcohol)	6 c.c.

By heating the mass for three-quarters of an hour at about 1,300° C. a product is obtained which emits an emerald-green light.

Luminous Vial

A solution of phosphorus in olive oil (5 gr. in 1 oz.) is made with heat. Half an ounce of the product is poured into a 4-oz. stoppered bottle and shaken so as to cover the whole interior of the bottle, whose surface is luminous in the dark. The stopper is loosened occasionally to favour the oxidation which is the cause of the luminosity.

LOZENGES

Summary.—Methods of Making Lozenges—Boiled Sweets—Official and other Lozenges—Fruit-paste Lozenges—Jujubes and Pastilles—Cachous.

MOST medicinal lozenges are made by the pharmacopœial process, but confectioners recognise several methods, depending upon the nature of the ingredients and whether they are combined in the cold or hot way. Lozenge-making, like every other art, requires practical experience, and cannot be taught in a book-chapter, but there is much in it so closely allied to pharmaceutical operations that a pharmacist can scarcely fail to turn out good products if he have the mechanical appliances for the purpose.

The simplest kinds of confectionery are boiled sweets and candies, made by dissolving sugar in water, boiling to a certain degree, and adding flavours, medicaments, and colourings. A large number of useful medicated sweets can be made in this way, without any exceptional apparatus except a brass jelly-pan, and good stone, slate, or iron slab to pour the 'boiling' on. Two degrees of boiling are suitable for pharmaceutical purposes. The first is adopted in making digestive candies. Here the sugar resumes its crystalline state on cooling.* The second is exemplified in acid-drops and toffees, in which the sugar is in an amorphous condition.

The process for making the first, or Candy Boilings, is generally as follows :—Dissolve the sugar in half its weight of water (3 pints to 7 lbs. of sugar is the common proportion) by heating on an open fire (or by steam-heat), and boil until there is a scum, which remove. Now add the medicaments, &c.,

carefully and gradually, cover the pan, and heat to a temperature of 250° to 255° F. This is what confectioners call the degree of 'ball.' The slab should by this time be ready to receive the boiling, having been well washed, dried, and rubbed very lightly with olive oil. Pour the boiling upon it to a depth of an eighth to a quarter of an inch, and allow to cool. When cold score the surface to the required size, and break up. It is important not to exceed the temperature 255° F., otherwise the boiling will go into the amorphous condition, and become sticky.

The second degree is that of 'crack,' and is conducted precisely in the manner described, but the boiling is continued to 310° or 315° F. After pouring it on the slab, the boiling is manipulated while it is pliable and sufficiently cool to handle, the flavours being added and worked in. It is cut while in this condition either by means of a machine-mould or with a sharp knife.

The following preparations are made by these methods :—

Acid Drops

Granulated sugar . .	28 lbs.
Water	1 gal.
Cream of tartar . .	1½ oz.
Tartaric acid . . .	½ lb.
Oil of lemon . . .	2 dr.

Boil the sugar and water, add the cream of tartar, boiling to the degree of 'crack'; pour on the slab, work in the acid and lemon when cool enough, knead well, and cut into drops.

Cough-drops

I. Chlorodyne

Granulated sugar . .	14 lbs.
Chlorodyne . . .	½ oz.
Tincture of tolu . .	½ oz.
Cream of tartar . .	½ oz.
Oil of anise . . .	1 dr.
Water	4 pints

Proceed as for acid drops, adding the chlorodyne, tincture, and oil to the mass on the slab.

II

Boil 2 oz. of bruised liquorice-root, 1 oz. of Iceland moss, 1 oz. of boneset, 2 oz. of marshmallow-root, and ½ oz. of hops in 3 pints of water to one-half. Let stand till cold, then strain and press off the liquid through a hair sieve. To each 16 oz. of the liquor add 2 lbs. of sugar; place on the fire and stir till the sugar is dissolved, add a teaspoonful of cream of tartar, and boil to the 'crack.' Pour on the slab, and cut when ready.

III

Granulated sugar . .	14 lbs.
Glucose . . .	3 lbs.
Tartaric acid . . .	3 oz.
Paregoric elixir . .	2 oz.
Oil of anise . . .	3 dr.
Water	4 pints

Proceed in the same manner as No. 1.

IV. Extra Strong

Granulated sugar	9 lbs.
Brown sugar	5 lbs.
Liquorice paste	1½ lb.
Liquid extract of poppies	2½ oz.
Tartaric acid	1½ oz.
Ipecacuanha powder	1 oz.
Tincture of tolu	1 oz.
Oil of anise	½ oz.
Cream of tartar	½ oz.
Water	4 pints

Melt the sugars in the water and bring them to a sharp boil. Add the cream of tartar, and continue to boil to the degree of crack; put in the extract of poppies and liquorice paste, and continue to boil for five minutes, then pour upon the slab and add the remainder of the flavouring ingredients. Work thoroughly and cut into tablets.

Bismuth Tablet

Precipitated chalk	ʒviij.
Carbonate of magnesium	ʒvj.
Subnitrate of bismuth	ʒij.
Granulated sugar	lb. ij.
Rose-water	ʒxvj.
Oil of cinnamon	ɱXL.

Dissolve the sugar in the rose-water by heating, bring to the boil, and sift in the chalk and magnesia mixed, continuing the heat to 250° F.; add the bismuth and the oil, stir, and pour on the slab. When cold, score into squares and break up.

Digestive or Live-long Candy

I

Powdered ginger	ʒij.
Powdered rhubarb	ʒiij.
Carbonate of magnesium	ʒj.
Granulated sugar	ʒxvj.
Water	ʒviij.
Oil of peppermint	ʒss.

Prepare in the same manner as bismuth tablet.

II

Powdered rhubarb	ʒss.
Powdered ginger	ʒj.
Granulated sugar	ʒxvj.
Cochineal colouring	ʒiss.
Oil of cinnamon	ɱx.
Oil of caraway	ɱxv.
Menthol	gr. v.
Oil of lemon	ɱxv.

Prepare as above.

III

A formula used by one of the most celebrated makers.

Pulv. acaciæ	4 lbs.
Pulv. zingib.	3 lbs.
Pulv. rhei	1½ lb.
Sodii bicarb.	1 lb.
Pulv. cardam.	½ lb.

Mix well together and add to a solution of

Sacch. alb.	96 lbs.

in

Aq. dest.	16 pints

Heat, and stir briskly until thick. Remove the heat, and, at as low a temperature as possible, add

Ol. limonis	12 oz.

Pour into greased tins, and cut into squares with a spatula.

Heartburn-tablet

Precipitated chalk	2 lbs.
Armenian bole	6 oz.
Sugar-candy	4 lbs.
Water	1 pint
Oil of cinnamon	1½ dr.

Prepare in the same manner as bismuth tablet.

Liquorice Drops

Granulated sugar	14 lbs.
Glucose	2 lbs.
Extract of liquorice	2 lbs.
Water	4 pints
Oil of lemon	½ dr.
Essence of pear	1 dr.

Boil to the degree of crack all the ingredients except the flavouring, which add immediately before pouring on the slab.

The proportions of sugar and water directed for acid drops can be adopted for any kind of sweets required, omitting the cream of tartar and adding the flavour and colour desired. The average quantity of essential oil to add is 15 minims to each pound of sugar, and the better the oils the smaller the quantity required. The powder used for dusting boilings is icing-sugar.

OFFICIAL AND OTHER LOZENGES

The lozenges of the British Pharmacopœia, 1898, are made like a pill-mass. That is another way of saying that the confectioner makes the lozenge-paste in the same manner that a baker makes dough. The Pharmacopœia gives methods and formulas for four distinct bases, which are as follows :—

With Fruit Basis

Take 500 times the quantity of drug ordered for one lozenge, mix it intimately with 15½ oz. of refined sugar in fine powder and 300 grains of gum acacia in powder; make the mixture into a paste with 1¼ fl. oz. of acacia mucilage, and 2 oz. of the black-currant paste of commerce previously softened with boiling distilled water, adding any additional distilled water that may be necessary. Divide the mass into 500 equal lozenges. Dry them in a hot-air chamber at a moderate heat.

With Rose Basis

Take 500 times the quantity of drug ordered for one lozenge ; mix it intimately with 17½ oz. of refined sugar in fine powder and 300 grains of gum acacia in powder. Make the mixture into a paste with 5 fl. dr. of acacia mucilage and a sufficient quantity of the official rose-water. Divide the mass into 500 equal lozenges. Dry them in a hot-air chamber at a moderate temperature.

With Simple Basis

Same as the rose basis except that distilled water is used instead of rose-water, and 1¼ oz. of mucilage in place of 5 dr.

With Tolu Basis

Take 500 times the quantity of drug ordered for one lozenge ; dissolve what salts of alkaloids may be ordered in 3 fl. dr. of distilled water ; mix the solution intimately with 17 oz. of refined sugar in fine powder and 300 grains of gum acacia in powder. Thoroughly incorporate with the mixture any other drugs ordered for the lozenges, and 3 fl. dr. of tincture of balsam of tolu. Make into a paste with 1¼ fl. oz. of acacia mucilage and any additional distilled water that may be necessary. Divide the mass into 500 equal lozenges. Dry them in a hot-air chamber at a moderate temperature.

With any of these bases suitable for the medicament lozenges may be made as required. The tolu basis is best for

bronchial and throat lozenges. The appliances necessary for making lozenges on the small scale are a smooth marble slab, with adjustable sides, to cut the lozenges upon; a smooth stone slab to mix the paste on; a rolling-pin; lozenge-cutters; a good palette-knife, 15 inches long; a brush, made with long, soft hairs; linen cloth to run through cutters when clogged with the paste; lozenge-trays, made of smoothly planed seasoned deal, 4 feet long by 2 feet wide, with edges 1 inch deep; a hot-closet or drying-room, with racks fitted round it to place the trays of lozenges upon, and heated, free from dust and smoke. Small gallipots of water must be kept near the cutting-slab to place the cutters in to free them from the paste which clings to the edges.

The essential ingredients of lozenges are finely powdered or icing sugar, a mucilage of picked gum arabic, and the flavouring agents. The method of procedure is illustrated in the preparation of Peppermint Lozenges. The confectioner takes 28 lbs. of icing-sugar, and makes a heap of it on the slab, with a big hole in the centre of the heap, then pours in 4 pints of thick acacia mucilage, and on that 1 oz. of peppermint oil, working the liquids well together. When sufficiently mixed, the sugar from all round the sides is stirred in, and the worker makes the whole into a stiff paste with as much of the sugar as can be used. If it is too stiff more mucilage is added, if too sticky more sugar. The paste is now ready to roll out. Take about 2 lbs. from the bulk and work it with the hands into a compact square piece, keeping it from sticking to the slab by means of powdered starch. It is customary to cover the mass with a damp linen cloth while any part of it is being rolled and cut, as it may become brittle and unmanageable in the course of a few hours. A portion of the mass is next rolled out upon the slab with the sides adjusted to a height equal to the thickness of the lozenges desired, and the lozenges are cut out with a punch. While the mass is being rolled it is sprinkled with icing-sugar from a dredging-box to prevent it sticking to the rolling-pin. The lozenges are transferred to a tray, exposed to dry air for

twelve to twenty-four hours, then placed in the drying-cupboard until hard. The following lozenges are made in this manner :—

Aperient Lozenges

Icing-sugar	ʒxvj.
Sulphur	ʒx.
Cream of tartar	ʒij.
Calcium bisulphite	ʒv.
Tincture of capsicum	ʒij.
Ipecacuanha-wine	ʒij.
Acacia mucilage	a sufficiency to mass

Divide into 25-gr. lozenges.

Dose : One to three lozenges, taking a glass of water afterwards.

Anodyne Cough-lozenges

Extract of white poppies	ʒiv.
Extract of liquorice	ʒiv.
Powdered acacia	ʒiv.
Icing-sugar	ʒxvj.

Mix together, making into a lozenge-paste with distilled water, in the manner directed for trochisci opii, B.P. Divide into 10-gr. lozenges, and dry.

One of these lozenges may be taken every four hours.

Bronchial-lozenges

Preparation A

Cubeb-powder	ʒss.
Stockholm tar	ʒss.
Oil of wintergreen	♏xx.
Solution of potash	ʒvj.
Orange-flower water to	ʒiv.

Macerate for twenty-four hours in a warm place, shaking occasionally ; then filter through kaolin.

Preparation B

Marshmallow	ʒij.
Horehound	ʒij.
Liquorice	ʒij.
Aniseed	ʒij.
Lobelia-seeds	ʒss.
Hops	ʒss.
Ipecacuanha	ʒij.
Cayenne	ʒij.

Roughly bruise, and add to 1 gal. of water ; boil, and allow to simmer for some hours ; press and strain, then evaporate to about 30 oz. ; add the infusion of cubebs, diluted with 4 oz. of rectified spirit, and filter.

Two ounces of this preparation to be added to 14 lbs. of lozenge-basis.

Brompton Hospital Cough-lozenges

Extract of liquorice	gr. iij.
Oil of anise	♏ss.
Lozenge-basis	gr. xv.

For one lozenge.

Cayenne Lozenges.

Icing-sugar	lb. ij.
Capsicin	ʒss.
Spirit of rose	ʒij.
Cochineal colouring	ʒij.
Acacia mucilage	a sufficiency

Knead into a paste, and cut into lozenges.

Chlorodyne Lozenges

Icing-sugar	ʒxvj.
Comp. powder of tragacanth	ʒss.

Mix, and add the following ingredients, previously well mixed together :—

Chloroform	ʒiss.
Oil of peppermint	♏xx.
Tincture of capsicum	♏xx.
Solution of muriate of morphine	ʒj.
Mucilage of acacia	ʒiij.

Knead into a mass, and divide into 20-gr. lozenges.

Coltsfoot Cough-lozenges

Each contains pulv. ipecac. gr. ⅛, with ext. tussilag., tolu, glycyrrh., and pulv. acaciæ a sufficiency to make a lozenge.

Cough-lozenges

I

Powdered ipecac.	1 oz.
Citric acid	1 oz.
Liquorice-juice	1 lb.
Oil of anise	2 dr.
Icing-sugar	12 lbs.
Acacia mucilage	a sufficiency

Soak the liquorice-juice (coarsely powdered) in 10 oz. of water overnight, then boil. Mix the ipecacuanha and acid with the sugar, sifting several times. Put the strained liquorice into it, then the oil and mucilage. Stir up, and knead into a paste.

II

Lactucarium	ʒij.
Powdered ipecac.	ʒj.
Powdered squill	℈ij.
Extract of liquorice	ʒij.
Icing-sugar	ʒij.
Mucilage of tragacanth	a sufficiency

Make a paste, and divide into 20-gr. lozenges.

No. I. is the ordinary brown cough-lozenge. No. II. is said to be like Keating's.

P.F. 25

Pulv. scillæ	ʒij.
Acid. benzoic.	ʒss.
Pulv. ipecac.	ʒij.
Morphinæ acetatis	ʒj.
Antim. tartaratæ	ʒj.
Acid. tartaric.	ʒj.

Mix with 7 lbs. of coltsfoot paste and divide into lozenges.

P.F. 26

Morphin. hydrochloridi	gr. lxviij.
Pulv. ipecac.	ʒxj.
Acid. tartarici	ʒxj.
Acid. benzoici	ʒvss.
Ess. limonis	ʒvss.
Pastæ anisi	lb. vij.

Twenty-four lozenges to the ounce.

Cordial Cough-lozenges

Cough-lozenge paste and linseed, liquorice, and chlorodyne paste, of each equal parts. Mix and divide into lozenges of suitable size.

Cough-paste

Pulv. sacchari	lb. lx.
Succi glycyrrhizæ sicc.	lb. iv.
Morphinæ hydrochloridi	ʒiss.
Antimonii tartarat.	ʒiss.
Pulv. ipecacuanhæ	ʒx.
Ol. limonis	ʒij.
Mucil. acaciæ	q.s.

M.S.A.

Skelton's Pulmonary Lozenges

The following is the formula given in Skelton's 'Practice of Medicine,' but the product is not the same as the proprietary lozenge.

Sugar (fine white)	ʒxvj.
Tincture of tolu	ʒj.
Antispasmodic tincture	ʒss.
Oil of peppermint	gtt. xx.
Gum arabic	sufficient

Form the whole into a mass, cut out, and prepare in the form of lozenges.

Trochiseus Antispasmodicus

(syn. *Fit-lozenges*)

Ol. succini rect.	ʒx.
Pulv. sacchari albi	lb. xv.
Mucil. acaciæ	q.s.

M.S.A. et div. in trochis. gr. xx.

Ginger Lozenges

Powdered ginger	8 oz.
Oil of lemon	2 dr.
Vegetable yellow	a sufficiency
Icing-sugar	12 lbs.

Make into a paste by the usual method.

Laxative Lozenges

(Resembling Tamar Indien)

Pulv. sennæ	gr. v.
Pulv. jalapæ	gr. v.
Ol. anisi	gtt. $\frac{1}{8}$
Ol. limonis	gtt. $\frac{1}{4}$
Pulv. sacch. alb.	gr. v.
Pastæ tamarind.	ʒss.

Make into one lozenge, and coat with chocolate-and-sugar paste, as below :—

Cadbury's cocoa essence	3 oz.
Powdered sugar	6 oz.
Cocoa-butter	4½ oz.

Melt the cocoa-butter, add the other ingredients, and mix.

Linseed, Liquorice, and Chlorodyne Cough-lozenges

Sacchar. alb.	cwt. j.
Ext. glycyrrhizæ	lb. ij.
Chloroformi	lb. vj.
Capsicini	ʒj.
Ol. menthæ piperitæ ang.	ʒj.
Mucilaginis lini	Oj.

Put the sugar into the mixer and leave a hollow in the middle. Place about six pints of acacia mucilage in a pan, with the melted liquorice and 8 oz. brown-paste colour. When well mixed, add the chloroform, mint, and capsicin ; stir the whole well together, and put into the mixer. Set the mixer in motion, and put a cover on to prevent evaporation of the chloroform. If required, add to it more mucilage. When well kneaded together, put into a zinc-lined box or earthenware pan until the next day. It is then ready to be cut by hand and stamped with the linseed, liquorice, and chlorodyne stamp. These lozenges must not be put to dry in a higher temperature than 80° F., or the chloroform will evaporate when dry.

Magnesia Lozenges

(Syn. *Heartburn-lozenges*)

Powdered sugar	24 lbs.
Heavy magnesium carbonate	3 lbs.
Prepared chalk	3 lbs.
Powdered orris	3 oz.
Oil of nutmeg	2 dr.
Gum arabic	2¼ lbs.
Water	40 oz.

Make a mucilage of the gum with the water, and mass in the usual manner.

Sore-throat Lozenges

Cocaine hydrochloride	℈vij.
Potassium chlorate	ʒij. ʒvj.
Chocolate	ʒxiv.
Sugar, &c.	lb. vij.

Divide each ounce of the mass into twenty-five lozenges, so that each will contain $\frac{1}{20}$ gr. of cocaine.

Worm-lozenges

I

Calomelanos	gr. ij.
Pulv. scammonii	gr. ij.
Pulv. sacchari	ʒj.
Ol. menth. pip.	q.s.
Mucilaginis	q.s.

Colour with cochineal.

II

Santonini	gr. j.
Sacchari albi	℈j.

Fiat trochiscus sec. art.

Worm Lozenges or Tablets

Calomelanos	gr. j.
Santonini	gr. j.
Basis	q.s. ut ft. troch.

Other formulas for medicated lozenges will be found in the Supplementary Chapter beginning p. 833.

Lozenges made by compression have become very popular in Great Britain recently. They consist of the dry ingredients of lozenge-paste, with 1 oz. of powdered acacia to the pound, the whole being intimately mixed and granulated before compression.

FRUIT LOZENGES

Black-currant Paste, which is now much used in medicinal-lozenge making, is directed to be made by the Throat Hospital Pharmacopœia in the following manner :— Take 7 lbs. of black currants and 1 pint of water, and boil together, crushing the berries with a pestle until the mixture is thoroughly pulped, then pass through a sieve and beat into a paste with 3 to 4 lbs. of powdered sugar. In the same way red-currant paste is made. This method is open to improvement, but on the whole it gives a good paste. The old plan is to heat the juice of the currants until it forms a clear jelly on cooling. This jelly keeps perfectly in a cold cellar without addition of antiseptics, and 1 lb. of it with 2 lbs. of powdered sugar and 4 oz. of powdered gum arabic, makes an acceptable plain fruit lozenge. This mixture may also be employed for making medicated lozenges. The sugar used for sprinkling fruit lozenges should be broken crystals freed from powder. The first two formulas following are examples of the T.H.P. prescriptions :—

Trochisci Cubebæ

Cubebs, in powder .	200 gr.
Extract of liquorice .	1,225 gr.
Tragacanth, in powder	70 gr.
Refined sugar . .	200 gr.
Black-currant paste .	a sufficiency

Prepare and divide into 350 lozenges. To be marked C.B.

Trochisci Krameriæ

Extract of rhatany in powder . .	1,050 gr.
Tragacanth . .	70 gr.
Refined sugar . .	280 gr.
Red-current paste .	a sufficiency

Prepare and divide into 350 lozenges. To be marked R.

Voice-lozenges

Powdered cubebs . .	gr. $\frac{1}{2}$
Benzoic acid . . .	gr. $\frac{1}{3}$
Cocaine hydrochloride .	gr. $\frac{1}{10}$
Powdered tragacanth .	gr. $\frac{1}{4}$
Extract of liquorice .	gr. v.
Sugar	gr. x.
Eucalyptol . . .	$\mathfrak{m}\frac{1}{4}$
Oil of anise . . .	$\mathfrak{m}\frac{1}{20}$
Black-currant paste to make one lozenge.	

The lozenges should be sprinkled, before drying, with finely crystallised sugar.

Directions.—Nibble about a quarter of a lozenge immediately before singing or speaking.

JUJUBES AND PASTILLES

Gelatin and Gum Goods, as jujubes are called by confectioners, are made from the best picked gum arabic and sugar, and only the inferior kinds contain gelatin. The common proportions are :—Gum arabic, 32 lbs. ; sugar, 14 lbs. ; water, 2 gals. These are warmed by steam-heat until, with occasional stirring, the gum and sugar are dissolved, then strained. Some makers dissolve the gum alone in the water, strain, then add the sugar, and heat until it is dissolved. Solution effected, the preparation must be steadily heated until it attains a proper pourable consistency. When it is approaching this point the colouring and flavouring materials are added, the whole well mixed, and poured to the depth of about half an inch into oiled tin trays (jujube-boxes), or, if to be in the form of pastilles, the thick syrupy liquid is poured into moulds made in trays of farina. These trays are next put into the drying-rooms for a period varying from four to six or seven weeks. It is in this way that Voice-jujubes are made, the colouring being cochineal and a trace of liquorice, the flavours capsicin with traces of tolu, prunes, &c. Delectable Jujubes are similar without the capsicin, and Glycerine Pastilles have 2 lbs. of glycerine added to the above quantities of gum and sugar. The last-mentioned pastilles are often coated with a plain solution of gelatin to prevent them sticking. This is done exactly in the same way that pills are coated with gelatin. The crystallisation of gum goods is done by putting the jujubes into special crystallising-tins, and filling the tins with a blood-warm syrup consisting of 24 lbs. of sugar and a gallon of water. At the end of twelve hours (more or less according to the extent of the crystallisation desired) the syrup is drained off, and the jujubes dried. Glyco-gelatin Pastilles are made with either of the following bases :—

1. T.H.P.	
Refined gelatin . .	ʒj.
Glycerine (by weight) .	ʒiiss.
Ammoniacal solution of carmine . .	a sufficiency
Orange-flower water .	ʒiiss.

The gelatin is soaked in the water for two hours, then heated on the water-bath till dissolved, and the glycerine added. The carmine solution is added after cooling.

II. 'Art of Pharmacy'

Transparent French gelatin	ʒiv.
White sugar	ʒiv.
Glycerine	ʒiiss.
Water sufficient to make	16 fl. oz.

Prepare in the same way as No. 1. This mass may be flavoured with 20 minims of oil of lemon, and for some combinations a small amount of citric acid is a decided improvement.

The medication of the pastilles is accomplished by melting 1 oz. of the glyco-gelatin on a water-bath, adding the medicine, previously rubbed to a thick syrup with glycerine if a powder, stirring until nearly cool, and forming into square or round pastilles, preferably the latter, which are easily obtained by using Bilson's mould (made by Toogood). Mr. F. E. Bilson, of Bournemouth, who designed the mould referred to, has favoured us with the following formulas used by himself:—

Glyco-Gelatin

(Modified. *See also* p. 628.)

French gelatin	ʒviij.
Glycerine (by weight)	ʒxx.
Tolu water	ʒxx.
Ammoniacal solution of carmine	ʒiij. ɱxij.

Prepare as already directed.

Ammonium-chloride Pastilles

Ammonium chloride	ʒiij. gr. xij.
Ammonium glycyrrhizinate	gr. xxiv.
Glyco-gelatin (without carmine)	ʒviij.

To make 96 pastilles, each containing 2 gr. of the chloride.

Cocaine Pastilles

Cocaine hydrochloride	gr. xij.
Citric acid	gr. xxxij.
Oil of lemon	ɱxxiv.
Glyco-gelatin	ʒviij.

To make 96 pastilles, each containing $\frac{1}{8}$ gr. of cocaine.

Morphine and Ipecac. Pastilles

Morphine acetate	gr. ij$\frac{2}{3}$
Ipecacuanha vinegar	ɱCLX.
Oil of lemon	ɱxxiv.
Citric acid	gr. xxxij.
Glyco-gelatin	ʒviij.

To make 96 pastilles, each containing morphine acetate $\frac{1}{36}$ gr. and ipecacuanha $\frac{1}{12}$ gr.

The tolu water to be used in the above is the B.P. liquor for making syrup of tolu. It is an agreeable variant from the orange flavour, and some prefer it. Mr. Bilson's mould, if well filled, makes pastilles twelve of which weigh 1 oz. It is best not to oil the mould, but do not pour the mass in too hot, and allow to flow over a spatula. We give the following as a further example of the method of procedure.

Menthol Pastilles

Gelatin	ʒj.
Glycerine (by weight)	ʒiiss.
Orange-flower water	ʒiiss.
Menthol	gr. v.
Rectified spirit	ʒj.

Soak the gelatin in the water for two hours, then heat on a water-bath until dissolved and add 1½ oz. of the glycerine. Dissolve the menthol in the spirit, mix with the remainder of the glycerine, add to the glyco-gelatin mass, and pour into an oiled tin tray (such as the lid of a biscuit-box). When the mass is cold, divide it into ten dozen pastilles.

The process is an excellent one for extemporaneously preparing throat-pastilles to the physician's order; few articles of elegant pharmacy being so quickly and easily prepared. Many specialities for retail can also be made in the same manner, and they yield a good profit.

Liquorice Basis.—Sir James Sawyer recommends lozenges to be made extemporaneously with pasta glycyrrhizæ alba, or *pâté de réglisse blanche* ('Beasley's Pocket Formulary,' 1886 edition):—

Take of decorticated liquorice-root ʒiv., water Oiv.; macerate for twelve hours; strain and add lb. iiss. of picked gum arabic and lb. iiss. of refined sugar; dissolve, strain, and evaporate to the thickness of honey, constantly stirring, and add gradually the whites of twelve eggs well beaten with ʒiv. of orange-water; evaporate with constant stirring till the paste is so firm as not to adhere to the hands.

Any drug or drugs can be combined with the paste, 10 gr. of which is used for each lozenge.

Cachou Aromatise

I

Powdered mace	216 gr.
Powdered cardamoms	154 gr.
Powdered vanilla	283 gr.
Powdered cloves	77 gr.
Powdered orris-root	309 gr.
Powdered musk	15 gr.
Oil of neroli	20 drops
Oil of cinnamon	30 drops
Oil of lemon	40 drops
Oil of peppermint	60 drops
Extract of liquorice	2 oz.
Chocolate	3 oz.

Syrup to make a mass.

Divide into small pills and silver.

II

Musk in powder	gr. ss.
Cardamoms in powder	gr. viij.
Ginger in powder	gr. xv.
Orris-root in powder	gr. xv.
Liquid storax	ʒss.
Sugar in powder	ʒiiss.
Tragacanth in powder	ʒss.
Peppermint oil	mxij.

Syrup to make a mass.

Triturate the musk and peppermint oil for ten minutes with the sugar, and add the tragacanth. Separately mix the storax with the spices, add the musk mixture, mix, and mass. Divide into 300 pills.

III

Succ. solazzi . . .	ʒiij.
Aquæ	ʒiij.

Dissolve by the heat of a water-bath, and add

Pulv. catechu . . .	ʒj.
Pulv. acaciæ . . .	ʒss.

Evaporate to the consistence of an extract, and then incorporate the following substance in a fine powder:—

Pulv. mastic. . . .	ʒj.
Pulv. cascarillæ . .	ʒj.
Pulv. carbo. ligni . .	ʒj.
Pulv. iridis rad. . .	ʒj.

Reduce the mass to a proper consistence, remove it from the fire, and add

Ol. menth. pip. . .	gtt. xxx.
Essent. ambergris . .	gtt. x.
Essent. moschi . .	gtt. x.

Mix, and divide into 1-gr. pills.

To make the small diamond cachous omit the catechu, use ½ oz. of charcoal, the same of syrup, and the following flavour: Menthol ℈j., otto of rose ♏v., musk essence ♏xv., heliotropin gr. ij. Roll out flat and cut with a palette-knife.

Lozenge Cachous are now replacing the pilular kind. In these a simple lozenge-basis is suitably coloured, and flavoured with the essential ingredients (with part only of the spirit) of the appropriate perfumes. Some synthetic perfumes give ex-

The tabellæ of the British Pharmacopœia are small chocolate and sugar lozenges. The method of making them is described in the chapter on Galenical and Medicinal Preparations.

MISCELLANEOUS PREPARATIONS

SOME formulas, like folk, refuse to be classed. We may call them Bohemian. Of such this chapter is composed, and no summary of its contents is possible.

Anti-incrustation Fluids

These preparations for preventing boiler-scale consist generally of a 10-per-cent. solution of soda ash in water with or without astringent matter, such as tanners' or wattle bark, catechu gruffs, and eucalyptus-leaves (1 lb. to the gallon).

Caustic potash . .	28 lbs.
Caustic soda . . .	28 lbs.
Lime	14 lbs.
Resin	7 lbs.
Water	10 gals.

Boil together, decant, and mix with the following solution :—

Catechu (acacia) . .	28 lbs.
Water	10 gals.

Boiler-insurance companies do not allow soda solutions to be used in the boilers they insure.

Boiler-incrustation Preventer

Tribasic sodium phosphate (Na_2PO_4,12H_2O), under the name of 'Tripsa,' was recommended twenty years ago as an addition to boiler-water to prevent the formation of hard crusts of deposit. It converts calcium carbonate and sulphate into uncakeable phosphates, and neutralises the acids released by decomposition. Tribasic sodium phosphate is also used as a general water-softener, and is specially claimed to be of service in removing deposits from vessels that have contained milk.

Arsenical Soap for Taxidermists

I

Powdered camphor . .	ʒvj.
White arsenic . . .	ʒiv.
Slaked lime . . .	ʒiv.
Carbonate of sodium .	ʒxij.
Soft soap . . .	ʒiv.
Water . . .	a sufficiency

Mix in the above order to make a stiff paste.

II

Powdered camphor . .	ʒiiss.
White arsenic . . .	ʒxvj.
White soap . . .	ʒxv.
Carbonate of potassium .	ʒvj.
Quicklime . . .	ʒij.
Oil of origanum . .	ʒij.
Boiling water .	a sufficiency

Mix all the powders; boil the shredded soap with water to a jelly, add to the powders with the oil and sufficient water to make a stiff paste.

Battery Solutions

I

Bichromate of potassium .	ʒiv.
Bisulphate of mercury .	ʒss.
Sulphuric acid . .	ʒv.
Water	ʒvj.

Dissolve the two salts in the water and cautiously add the acid with constant stirring.

II. *Liq. Electropœicus*, N.F.

Sodium bichromate	145 grams
Sulphuric acid	300 c.c.
Water	1,000 c.c.

Pour the acid upon the bichromate in powder, and stir the mixture occasionally for an hour, then add the water slowly.

This is for the galvano-cautery. For ordinary bichromate cells use 125 grams of sodium bichromate and 125 c.c. of acid and water 1,000 c.c. Potassium bichromate also may be used.

III. Leclanché

A saturated solution of sal ammoniac.

The following are the better-known forms of primary batteries:—

Bunsen's.—A cylinder of retort-carbon and circular plate of zinc in nitric acid.

Daniell's.—The copper electrode dips in a solution of copper sulphate, and the zinc electrode in solution of zinc sulphate.

Gaiffe's Medical Cell.—Solution of zinc chloride is used. The positive electrode is zinc, and the negative fused zinc chloride.

Grove's.—A platinum electrode in strong nitric acid, and zinc electrode in dilute sulphuric acid (1 to 10 by volume).

Lockwood's.—A modification of the Daniell.

Meidinger.—A gravity modification of the Daniell.

Minnoto's.—A disc of copper is covered with a layer of copper sulphate, then a layer of canvas and one of sand or sawdust (soaked in solution of zinc sulphate), then above that a zinc disc. Fill to above the zinc with solution of zinc sulphate.

The Electric Dry Cell contains a zinc cylinder and within it a carbon plate. The inner surface of the zinc is coated with a mixture of plaster of Paris 5 parts, sal ammoniac 2 parts, and water 11 parts. After this hardens the carbon is inserted, and the space between filled with the following:—

	Parts by weight
Powdered carbon or graphite	75
Coarsely powdered black oxide of manganese	10
Sulphate of zinc	5
Sal ammoniac	15
Glycerine	2
Water	a sufficiency

Make a paste. Afterwards seal the cell with melted pitch.

The Burnley Dry Cell (Patent 1100 of 1890) has a zinc cylinder lined with a plastic exciting-mass made of

Sal ammoniac	1 part
Zinc chloride	1 part
Plaster of Paris	3 parts
Flour	1 part
Water	2 parts

In the centre of the cell a carbon core is placed, the space between it and the exciting-mass being filled with

Sal ammoniac	1 part
Zinc chloride	$\frac{1}{10}$ part
Manganese peroxide	3 parts
Powdered charcoal	$3\frac{1}{2}$ parts
Water	a sufficiency

The manganese oxide and charcoal play the part of a depolarising-agent.

Obach's Dry Cell (6565 or 1893) is formed of an outer cylinder of zinc cemented to an insulating-base composed of

Asphalt	70–80 per cent.
Paper pulp	10–15 per cent.
Resin	10–15 per cent.

A smaller cylinder of depolarising

paste, with the carbon rod in the centre, is put inside the zinc cylinder, the space between the two cylinders being filled with exciting-mixture. The composition of the depolarising-paste is

Mang. peroxide	50–60 per cent.
Plumbago .	40–50 per cent.
Tragacanth .	1 per cent.

The exciting-mixture is

Plaster of Paris	80–90 per cent.
Flour . .	10–20 per cent.

made into a thin paste with solution of sal ammoniac. The cells are covered with granular cork or an equivalent to prevent escape of moisture, and a bitumen seal. One terminal is soldered to the zinc, and the other to the carbon, by means of an alloy of bismuth (2), lead (2), tin (1), which expands on solidifying and ensures good contact.

The Hellesen Dry Cell (4369 of 1885) has expired. In this superoxide of lead, oxide of iron, or superoxide of manganese is used for surrounding the cathode, the powder being packed round it with slight pressure and held there by means of fabric, a porous cell, or parchment-paper. The powder, the inventor states, can be advantageously mixed with such things as charcoal, graphite, and copper filings; and when saline solutions are used, an acetate, free ammonia, or sal ammoniac prevents crystallisation of the zinc compounds derived from the outer zinc cylinder.

Billiard-ball Colouring

Old balls are greasy, and do not take on the colour well until they are cleaned. Most people who try the dyeing omit the cleaning, so fail. The way to proceed is as follows:—

First: Wash the ball by immersing in benzine for a few minutes; take it out, pour some benzine over it, and wipe dry.

Second: Dip it in an acid bath—30 drops of nitro-muriate of tin solution to 3 oz. of water. Allow to remain in the bath for a few minutes.

An alternative cleaning-process is to wash the ball in a warm solution of soda ($\frac{1}{2}$ oz. to the pint), then in dilute nitric acid (5 per cent.) for twenty minutes, and finally with cold water.

Third: Give it the dye-bath.

The following are some of the best dye-baths:—

Reds

(1) Aniline cardinal, 1 in 20 of water; or equal parts of Judson's cardinal and water.

(2) Powdered cochineal ʒj., stannous chloride ʒj., water ʒxij.; boil and strain. Use warm.

(3) Carmine 3 gr., ammonia solution to dissolve, water to ʒj.

(4) A spirituous solution of fuchsin.

(5) Carmine 2, soda 12, water 200. Boil the ball in this, then neutralise free alkali with acetic acid. Slight excess of the acid may be used.

Blue

Methyl-blue gr. x., water ʒj., or equal parts of Judson's Oxford blue and water.

Green

Diamond green, G. B., 1 part, and water 20 parts.

Yellow

Potassium-chromate solution (1 in 20), followed by the same strength of lead-acetate solution.

For other colours use alcoholic solutions of aniline dyes.

NOTE.—The colours must be applied after the nitro-muriate bath. Equal parts of nitric acid (1 in 3)

and stannous-chloride solution (10 per cent.) may be used. The dyes act as well in methylated-spirit solution, which, indeed, penetrates better. Polish with linseed oil.

Blocking-powder

Powdered resin . .	℥ix.
Powdered sandarac . .	℥j.

Mix.

Brush-powder

Carbonate of sodium and soap, dried and powdered, of each equal parts. Add 2 drops of oil of citronella to each pound.

Carboy-colours

Amethystine

Salicylate of sodium .	10 gr.
Tincture of perchloride of iron	½ dr.
Water	2 gals.

Dissolve the salicylate in the water and add the tincture.

Blue

Sulphate of copper .	4 oz. or more
Solution of ammonia	a sufficiency
Water	2 gals.

Dissolve the sulphate of copper in 2 pints of water, and add solution of ammonia with constant stirring until the precipitate is redissolved, then add the rest of the water.

Canary

Picric acid . . .	2 oz.
Water . . .	2 gals.

Dissolve.

Emerald

Sulphate of nickel . .	3 oz.
Sulphuric acid . .	6 oz.
Water	2 gals.

Dissolve the sulphate in the water, and add the acid, stirring constantly. Allow to deposit, and decant.

Fluorescent and Dichroic

Nearly fill the carboy with water, then add a solution of 10 gr. of fluorescein (or uranine) in 1 oz. of rectified spirit, and mix. This makes a very pretty fluorescent solution, but as it becomes mouldy in a month or two it requires the addition of 20 drops of formalin, which should be dropped in when the carboy is put in its place, and not mixed.

Garnet

Bichromate of potassium .	1 lb.
Sulphuric acid . .	16 oz.
Water	2 gals.

Dissolve the bichromate in the water, then add the acid gradually, stirring all the time.

Green

Sulphate of copper . .	1 lb.
Common salt . . .	3 lbs.
Hydrochloric acid . .	1 pint
Water	2 gals.

Dissolve the sulphate and salt in the water, add the acid, and set aside for several days, then decant the clear solution.

Opalescent

Oil of pimento . .	½ dr.
Rectified spirit . .	2 oz.
Water	2 gals.

Mix and expose to the air for a week or so, then filter.

Orange

Bichromate of potassium .	1 lb.
Nitric acid . . .	8 oz.
Water	2 gals.

Dissolve the bichromate in the water, and add the acid.

Pink

Chloride of cobalt .	1 oz.
Carbonate of ammonium	1½ oz.
Water	2 gals.

Dissolve the chloride of cobalt in 1½ gal. of water, and the carbonate of ammonium in the rest, then add the latter solution to the former until the precipitate at first formed is redissolved.

Purple

Permanganate of potassium	40 gr.
Sulphuric acid	1 dr.
Water	2 gals.

Dissolve.

Red

Iodine	3 dr.
Iodide of potassium	3 dr.
Hydrochloric acid	10 oz.
Water	2 gals.

Dissolve the iodine and iodide in 8 oz. of water, and dilute with the rest, to which the acid has been added.

Rose

Cudbear	2 oz.
Water	10 oz.

Macerate for a day or two, filter, and add to the water till the required shade is produced. Then add to each gallon

Strong solution of ammonia ½ oz.

NOTE. — Any colour can be deepened by omitting water—*i.e.*, stopping the addition of water when the desired shade is reached. On the contrary, the colours may be lightened by adding more water. Distilled water should be used, and the solutions must not be filtered through paper. It is best to let them deposit, then decant; or, if filtration is desired, plug the neck of a funnel with glass wool, and strain through that.

Organic colours rapidly fade; this applies to aniline colours as well. Rosaniline, magenta, violet, and green make pretty shades of solutions, and if one does not object to renewing them once a fortnight, they cannot be improved upon.

Coloured-film Coatings

Solutions of aniline dyes in spirit mixed with shellac-varnish are used for coating the inside of carboys, so as to obviate the excessive weight of watery solutions, and the liability of these to freeze and thus crack the carboys during the winter months. The objection to the varnish coating is that it chips off. The following process is more satisfactory. It was devised by Mr. T. Maltby Clague, of Newcastle-on-Tyne :—

Aniline dye	gr. xv. to xxv.
Gelatin (not opaque)	℥j.
Water	℥vj.
Carbolic acid	℥j.

Soak the gelatin in water, dissolve the dye in warm water, and next add the softened gelatin and warm till melted, then add the carbolic acid. When the solution has cooled to about 150° F., pour it into the carboy, previously placed in a warm position until it has acquired a temperature of from 90° to 100° F. [A cloth dipped in hot water and carefully applied outside heats the carboy nicely.] Now keep turning it upside down and round about until the gelatin shows signs of setting, then put it on its stand and allow the jelly not adhering to the sides to settle to the bottom. Leave the stopper out for a few hours.

The following colours have been tried :—

Malachite green, a good colour to work with, and strikingly like sulphate-of-copper solution; about 25 gr. to 6 oz. is required. The colour fades somewhat, so that it is well to make it a trifle dark.

Methylene blue, 15 gr.; a rich colour very like ammonio-sulphate of copper.

Methyl-violet, 15 gr., a rich bluish red; can be made to vary according to the dye used.

Flamingo gives the nicest red, 15 gr.

Browns may be obtained with

Bismarck brown, brownish yellow with the same dye in smaller proportion; but the colours are not so striking as those already named. If the window is exposed to the sun, the film must be allowed to harden well before the carboy is placed in its position.

The objection to the films is that the lens effect of carboys filled with liquid is almost wanting.

Chemical-barometer Mixture

Camphor . . .	℥ss.
Ammonium chloride .	℥ss.
Potassium nitrate . .	℥ss.
Rectified spirit, 64 o.p. .	℥j.
Distilled water . .	℥ij.

Weigh the spirit into the bottle and dissolve in it the camphor, then add the salts and the water (warm). Shake, and when dissolved filter.

Long, narrow tubes of glass are filled with this solution and hermetically sealed or corked. The tubes are then affixed to boards by means of wires in the same way as barometers are fixed. The changes of the solution signify the following:

Clear liquid: Bright weather.

Crystals at bottom: Thick air, frost in winter.

Dim liquid: Rain.

Dim liquid with small stars: Thunderstorms.

Large flakes: Heavy air, overcast sky, snow in winter.

Threads in upper portion of liquid: Windy weather.

Small dots: Damp weather, fog.

Rising flakes which remain high: Wind in the upper air regions.

Small stars: In winter on bright, sunny days, snow in one or two days.

The higher the crystals rise in the glass tube in winter the colder it will be. All the foregoing s empirical.

CEMENTS AND LIQUID GLUES

Much of the success in applying cements depends upon the following factors:—

The surfaces to be united must be quite clean.

The less cement used the better.

There should be perfect contact between the cement and the surfaces. With this object heat the broken parts to such a point that the cement cannot solidify without having first had time to effect a perfect union. This is especially the case when using resinous materials.

Shellac is excellent for uniting metal to glass or stone, provided they are sufficiently heated to melt it. A small quantity suffices to make them adhere firmly together.

The principal obstacles to adhesion are air and dirt. All surfaces are covered with a thin layer of air which is very difficult to remove except by heat. Metals heated to about 170° F. are immediately moistened on being plunged into water; hence it follows, as regards cements applied in a fused state, that heat is the best means of bringing them into intimate contact with the surface. Heat also renders the surfaces more penetrable to the cement.

There are some remarkable formulas for cements which are found in all the best books, and are quoted with consummate courage by journalists. We mention a few of these, and trust that this is the last time they will be printed.

I

Isinglass	ʒj.
Water	ʒvj.
Mastic	℥iv.
Rectified spirit	ʒss.

Dissolve the isinglass in the water with a gentle heat, add the mastic previously dissolved in the spirit, and shake well.

II

Isinglass	1 part
Guttapercha	2 parts
Caoutchouc	4 parts
Carbon bisulphide	16 parts

This is for cementing the rubber tyres of bicycles. The oracle sayeth not how the stuff should be made, nor what good the isinglass may do floating threadlike in the jelly. Without the isinglass the cement is all right, but a trifle thick.

III

Isinglass	ʒj.
Water	ʒvj.

Boil to 3 oz., and add

Methylated spirit	ʒiss.

Strain and add

Ammoniac emulsion	ʒss.
Tincture of mastic	℥v.

Mix.

IV

Powdered shellac	ʒj.
Strong solution of ammonia	ʒx.

'Dissolve. It is at first slimy, in three or four weeks becomes liquid, then hard and impermeable.' This is the sovereign cement for bicycle-tyres. We tried it, and at the end of a month found that the ammonia had extracted the colouring-matter, but the mixture never became slimy. Heating effects solution.

Many more like the above might be quoted.

China-cement

Russian isinglass, fine cut	ʒj.
Powdered glue	℥j.
Distilled water	ʒij.
Salicylic acid	gr. x.

Put the isinglass and glue in a gallipot, add the salicylic acid and the water, pressing down the isinglass with a pestle until it is all soaked. Place the gallipot in a saucepan of water, bring to the boil, stirring until dissolved; then add

B.P. acetic acid	ʒj.

Mix well, and pour into bottles.

If the best isinglass is used this does not require to be strained, The glue is added to colour the cement, but may be omitted if a colourless preparation is needed.

Cue-cement

Isinglass	ʒj.
Distilled water	ʒij.

Proceed as above, then add the following solution previously filtered:—

Ammoniac or sandarac	℥ss.
Rectified spirit	ʒij.

This thin varnish must be added very cautiously to the isinglass solution, otherwise the resin separates as a white clot which is difficult to dissolve. Keep the container in the hot water all the time that the varnish is being added drop by drop, and do not cease stirring. Thus made the mixture remains translucent until it becomes cold, when it sets as a tough opalescent jelly. It is not so suitable for glass as the china-cement, but a mixture of the two is good.

Calomel-and-Gum Cement

Make calomel into a thin paste with fresh acacia mucilage. This is excellent for repairing compo-

sition mortars and earthenware generally.

Aquarium-cement

Venetian red	ʒvj.
Peroxide of iron	ʒij.
Boiled linseed oil	a sufficiency

Make a stiff paste. Apply to the joints and give it a week or so to set.

London Zoo Aquarium-cement

Litharge	3 parts
Fine white sand	3 parts
Plaster of Paris	3 parts
Powdered resin	1 part

All by measure. Mix and make into a paste with boiled linseed oil, to which some drier has been added. This is ready for use in four hours, and is useless twelve hours after mixing.

Litharge Cement

Finely powdered litharge made into a paste with glycerine—10 parts of litharge and 1 part (volume) of glycerine are the best proportions. This is good for repairing pestles and similar purposes. It sets quickly, but is attacked by acids and alkalies.

For Pestle-handles

There is no method better than to heat the head of the pestle until it can scarcely be held in the hand. Pour melted shellac into the hole, then take the wood part, round the screw of which some soft twine has been wound, and press it 'home.' Keep under pressure if possible until the head of the pestle is cold.

Equal parts of guttapercha, rosin, and shellac are also used.

Shellac Cement

Saturated solution of white or orange shellac in methylated spirit is used by stone-masons.

Rubber Cement
(Bootmakers' Solution)

Guttapercha raspings	ʒj.
Carbon bisulphide	ʒv.

Dissolve.

Directions. — The solution is spread on each of the pieces of leather to be united. After a few minutes, when the bisulphide has evaporated, the rubber is heated over a gas-flame, the parts stuck together, and the upper one rubbed with a warm iron.

The same solution, but somewhat stronger, is used for bicycle-tyres. Half an ounce of common resin may be added to it with advantage.

Plaster-of-Paris Cement
(For uniting metal to glass)

Common resin	ʒiij.
Caustic soda	ʒj.
Water	ʒv.

Dissolve the soda in the water, add the resin and dissolve. With this, when required, mix 4 oz. of plaster of Paris (or 1 part by volume of the solution and 1 part by weight of the plaster).

Ivory-cement

Isinglass	ʒj.
Gelatin	ʒij.
Water	ʒx.

Soak until the solids are soft, then heat on a water-bath, and add

Zinc oxide	ʒij.
Mastic	℈ij.
Rectified spirit	ʒss.

The addition of the hot solution must be made cautiously. First incorporate the zinc oxide, then put the mastic (dissolved in the S.V.R.) in a dish on a water-bath, and add the hot gelatin solution gradually, stirring constantly.

This has the objection of all cements containing mastic and gelatin with insufficient spirit. The mastic may be omitted for all the good it does.

Terracotta and similar articles are best repaired with shellac melted by heat and applied to the warmed articles.

Silicate Cement

Powdered glass . .	℥j.
Powdered fluorspar .	℥ij.
Solution of sodium silicate	℥vj.

Mix quickly and use at once.

Cement for Electrical and Chemical Apparatus

Resin	5 lbs.
Beeswax . . .	1 lb.

Melt together and stir in

Red ochre . . .	1 lb.
Plaster of Paris . .	3 oz.

Mix well.

This is also used by lapidaries.

Marine Glue

Caoutchouc . . .	℥j.
Benzol	℥xx.

Dissolve and add

Powdered shellac . .	℥xx.

Heat on a water-bath cautiously until the shellac is dissolved.

Other combinations go by the above name. This one is used for electrical apparatus.

Broken Mortars

Equal parts of guttapercha and shellac, fused together in an iron vessel, form a powerful cement. The fractured surfaces must be strongly heated, a little of the cement applied, and the pieces brought together under pressure.

Cement for White Letters

Enamelled letters for window-advertising may be applied with a paste made of dry white-lead and dammar varnish. This cement should be smeared uniformly over the back of the letter. Hollow letters should be filled with the cement.

To Fasten White-enamel Letters on Glass make a very thin paste of calomel and mucilage. Spread this thinly on the letters and press upon the glass so that as little as possible of the cement is left between the glass and the letters.

Cement for Recess Labels.—Resin 2 parts, yellow beeswax 1 part, liquefy by heat, and mix; then apply to the bottle and label previously warmed.

Glass to Brass. — Use plaster of Paris, adding to every 8 parts 1 of powdered sugar.

For Paraffin-pumps. — Finely ground litharge mixed into a stiff paste with glycerine. Sets hard within twenty-four hours.

Cement for Brass.—Thin white-lead made into a stiff paste with red-lead.

Cement for Meerschaum Pipes.—Mix ordinary isinglass cement with calomel or finely sifted white clay.

Casein or Cheese Cements are made preferably from fresh casein, precipitated from skimmed milk by acid, washing the precipitate well with cold water, and drying. This is used in a variety of ways—*e.g.*, (1) casein powder, 20 parts; quicklime, 4 parts: mix and add 1 per cent. of flowers of camphor. This powder to be made into a cream with water when required. (2) Casein powder, 2 parts; powdered borax, 1 part: mix; add a sufficiency of water when required. (3) Casein powder, 10 parts; slaked lime, 2½ parts; pearlash, 2 parts: mix and add water 20 parts.

Egg Albumen (fresh), 2 parts; quicklime, 1 part; water, 1 part: mix. This is used for cementing glass, porcelain, and similar goods.

Liquid Glues

I

French gelatin	1 lb.
Water	8 oz.

Allow to stand together in a 4-lb. gallipot until the glue is soft; then put the pot in a saucepan of water, and heat until the glue dissolves. Next add

Nitric acid	6 dr.

Stir until effervescence ceases, set aside for twelve hours, and decant.

II

Glue	ʒx.
Water	ʒxv.

Soak the glue in the water until soft, then add

Salicylate of sodium	ʒj.

and heat on a water-bath until dissolved. Then add

Oil of cloves	mxx.
Rectified spirit	ʒiij.

III

Liquid fish glue is said to be made from salt fish skins, especially cod skins. The skins are desalted, then boiled with water to dissolve the gelatin. The solution is strained, evaporated to the proper consistency, and a preservative added.

IV

Glue	ʒiij.
Gelatin	ʒiij.
Acetic acid	ʒiv.
Water	ʒij.
Alum	ʒss.

Heat together for six hours, skim, and add

Rectified spirit	ʒj.

Crystoleum

Method of colouring photographs.

The solutions employed for this are:—

Adhesive

Pulv. tragacanthæ	ʒj.
Spt. rectificati	ʒiij.
Acidi carbolici	ʒij.
Aquæ	ʒvj.

Cleansine

Balsam. canadensis	ʒj.
Ol. terebinthinæ	ʒij.

Preservine

Ol. papaveris	ʒj.
Ol. terebinthinæ	ʒss.

The photograph is stuck down on glass (generally convex) with the adhesive and a squeegee; when quite dry, it is flooded with cleansine, which makes it transparent, and the colours applied, these being mixtures of the pigments with preservine.

Another method is to mount the photograph as above, sandpaper most of the paper off, and apply the following:—

Transparency Medium

Hard paraffin	ʒij.
White wax	ʒij.
Canada balsam	ʒvj.

Cycle-oils

(For Burning)

I

Sperm oil	ʒviij.
Paraffin oil	ʒiij.
Camphor	ʒj.

Dissolve and mix.

II

(For Burning and Lubricating)

Heavy paraffin oil coloured with alkanet.

Cycle-puncture Locater

Aqueous solution of methylene blue.

A little of this is put into the valve of the pneumatic tyre before pumping it in a pail of water.

Cycle-puncture Fluids

The best are thick solutions of guttapercha, with or without gum resins. Another class consists of glycero-aqueous pastes of glue with an antiseptic such as salicylic acid.

Washable Distemper

I

Paris white	560 parts
Zinc-white	160 parts
Plaster of Paris	160 parts
White dextrin	39 parts
Gum acacia	16 parts
Borax	9½ parts
Alum	9½ parts

Mix.

One pound of this is to be mixed with a pint of boiling water, the mixture well stirred, and then thinned with cold water.

II

Freshly calcined gypsum	100 parts
Powdered glue	5 parts
Calcined copper sulphate	1 part

Mix.

Easter-egg Dyes

The following are German formulas for specialities which are very popular in Germany :—

Blue

Marine blue	ʒj.
Citric acid	ʒx.
Dextrin	℥ij.

Mix and divide into twenty packets. Each of the subjoined is also to be divided into twenty packets.

Chocolate Brown

Vesuvin	℥j.
Citric acid	ʒx.
Dextrin	ʒj.

Mix.

Green

Brilliant green	℥ss.
Citric acid	ʒv.
Dextrin	℥ij.

Mix.

Orange

Azo-orange	ʒiiss.
Citric acid	ʒv.
Dextrin	℥iiss.

Mix.

Bright Red

Diamond fuchsin	ʒj.
Citric acid	ʒv.
Dextrin	℥iiss.

Mix.

Rose

Eosin	℈iiiss.
Dextrin	℥iij.

Mix.

Violet

Methyl-violet	ʒj.
Citric acid	ʒv.
Dextrin	℥iiss.

Mix.

Yellow

Naphthol yellow	℥ss.
Citric acid	ʒx.
Dextrin	℥iiss.

Mix.

EASTER-EGG DYE

(Blue, &c.)

THE contents of this packet will dye a dozen eggs.

Directions.—Dissolve the dye in ½ pint of boiling water, stirring until dissolved. Boil the eggs for five minutes in plain water, then put them one by one into the bowl of dye, allowing them to remain for a minute or two until of the colour desired. Remove them, and allow to dry; then rub each egg with a little olive oil, polishing with an old handkerchief.

Egg-yellow for Bakers

Crocein B	ʒss.
Rectified spirit	ʒij.
Water	ʒxviij.

Dissolve.

Used for imparting an egg-like tint to sponge-cakes.

Coloured Fires

NOTE.—In the United Kingdom the Explosives Act provides that no person shall compound coloured fires except in premises licensed for the manufacture of explosives. The penalty for contravention does not exceed 100*l.* for each day on which the premises have been so used.

The ingredients for coloured fires should be carefully dried and powdered separately. Potassium chlorate is not to be dried, simply powdered. They should be sifted and each put into a well-corked wide-mouth bottle, and so kept ready for mixing. They are mixed with a wooden spatula, and sifted several times.

We have space for one formula of each colour only.

Blue

Copper oxide	ʒij.
Sulphur	ʒiv.
Chlorate of potassium	ʒvj.
Nitrate of potassium	ʒviij.

Mix.

Green

Black sulphide of antimony	ʒj.
Sulphur	ʒij.
Chlorate of potassium	ʒij. ʒj.
Nitrate of barium	ʒvss.

Mix.

Red

Wood charcoal	ʒj.
Sulph r	ʒij.
Chlorate of potassium	ʒij.
Nitrate of strontium	ʒviij.

Mix.

Violet

Wood charcoal	ʒj.
Sulphur	ʒij.
Precipitated chalk	ʒij.
Chlorate of potassium	ʒij. ʒvj.
Nitrate of potassium	ʒiij.

Mix.

White

Black sulphide of antimony	ʒvj.
Quicklime	ʒj.
Sulphur	ʒiiss.
Nitrate of potassium	ʒviij.

Mix.

Yellow

Nitrate of sodium	ʒviij.
Ground shellac (or button lac)	ʒij.

Mix.

Coloured flash-lights are mixtures of 2 oz. of powdered magnesium with 8 oz. of any of the foregoing.

Fire-extinguishers

I

Common salt	ʒj.
Nitrate of sodium	ʒj.
Sal ammoniac	ʒij.
Chloride of magnesium	ʒiv.
Water	Oj.

Put the salts into a wine-bottle, and fill up with water. Shake until dissolved.

II

Calcium chloride	ʒxx.
Sodium chloride	ʒv.
Water	ʒlxxv.

Dissolve.

Fireproofing Solutions

I

For Fabrics

Tungstate of sodium	ʒxvj.
Water	Oiss.

Dissolve in the cold, and add

Phosphate of sodium	ʒij. ʒij.
Water	Oj.

or a sufficiency of water to make the solution sp. gr. 1·140.

II

Sulphate of ammonium	℥viij.
Carbonate of ammonium	℥iiss.
Boric acid	℥iij.
Borax	℥j. ℥vj.
Water	Ox.

Dissolve, then add

Starch	℥ij.

Heat and stir until it boils.

These formulas have been tested by the Explosives Department of the Home Office. The first is the formula of that Department, and is used as follows:—Dip the material in the solution, wring out with the hands, dry, and iron if necessary. This is called the 'Home Office Method,' and is very commonly employed, especially for rendering theatrical wings uninflammable. The solution is not so good as No. II., which is used in the same way, but the material is dipped in the hot solution.

Dr. W. H. Perkin's process for fireproofing flannelette is patented, and consists in depositing the metallic oxide in the fibre; *e.g.*, the fabric is treated in a bath of sodium-stannate solution (19° B.) 5, sodium-tungstate solution (35° B.) 5, ammonium-chloride solution (4° B.) 2, and ammonia solution (·880) 1.

III

For Woodwork, Ropes, Straw Mats, Bags, &c.

Sal ammoniac	℥xv.
Boric acid	℥vj.
Borax	℥iij.
Water	Ov.

Dissolve.

Immerse the articles for fifteen or twenty minutes in the boiling solution, press, and dry.

IV

For Paper

Sulphate of ammonium	℥viij.
Boric acid	℥iij.
Borax	℥ij.
Water	Ov.

Dissolve.

Heat to 120° F. and impregnate the paper.

Fish-frying Oil

Cottonseed oil, olive oil, or corn oil, *not* liquid paraffin. The best colouring for the oil is butter-yellow (dimethyl-amido-azo-benzene).

Fish-frying Powder

Any cheap baking-powder containing two-thirds of its weight of rice-flour.

Flash-powder

Magnesium in powder alone or with an equal weight of powdered aluminium and 20 per cent. of potassium chlorate.

Formaldehyde Soap

Oleic acid	℥xxij.
Rectified spirit	℥xij.
Caustic potash	℥iv.
Distilled water	℥xij.
Formaldehyde solution (40-per-cent.)	℥L.

Mix the acid and the spirit, dissolve the potash in the water, and add gradually to the acid solution, shaking well. Set aside for a day (or overnight), and add the formaldehyde solution.

Freezing-mixtures

1. Ammonium nitrate, 1; sodium carbonate, 1; water, 1.

2. Ammonium chloride, 1; potassium nitrate, 1; water, 3.

3. Snow or ice, 5; common salt, 2; ammonium chloride, 1.

4. Ammonium chloride, 5; potassium nitrate, 5; sodium sulphate, 8; water, 16.

Gilding-powder

Gold chloride	℈j.
Potassium cyanide	ʒj.
Cream of tartar	gr. v.
Precipitated chalk	℈v.

Mix.

To be made into a paste with water and applied to the clean metal.

Gesso for Painters

Precipitated silica	ʒiv.
Calcined borax	ʒxij.
Litharge	ʒxxiv.

Mix, fuse, powder, and levigate with water.

A sample which we examined a few years ago was ordinary chalk in powder.

White Gunpowder

Chlorate of potassium	ʒij.
Ferrocyanide of potassium (dried)	ʒj.
Sugar	ʒj.

Mix.

Herb Tobacco-Substitute

Coltsfoot	8 lbs.
Eyebright	1 lb.
Thyme	1 lb.
Hyssop	1 lb.
Rosemary	1 lb.
Lavender-flower	2 lbs.
Rose-petals	8 oz.

Mix.

Infants' Food

I

Cooked flour, dried and powdered	ʒxij.
Sugar of milk	ʒij.
Dried malt-extract	ʒj.
Bicarbonate of sodium	ʒj.

Mix.

II

Biscuit-powder	2 lbs.
Sugar of milk	3 oz.
Dried malt-extract	1 oz.

Mix well by sifting.

III

Dried malt-extract	ʒxvj.
Condensed milk in powder	ʒviij.
Sugar of milk	ʒviij.

Mix.

Nos. I. and II. are of the Liebig type, and No. III. like Mellin's. No. I. is better than No. II. for a bottle-food.

IV

Flour (wheat)	8 oz.
Malt	2 oz. 174 gr.
Sugar of milk	187 gr.
Potassium bicarbonate	24 gr.
Sodium chloride	30 gr.

First bake flour to rupture the starch granules. Powder the malt, sugar of milk, potassium bicarbonate, and sodium chloride, and pass through a No. 20 sieve to remove all lumps and husks from the malt. Then thoroughly mix this with the baked flour and sift again. The food should then be sterilised and packed in airtight containers.

V

Powdered extract of malt	4 oz.
Powdered sugar of milk	4 oz.
Potassium bicarbonate	30 gr.
Sodium chloride	60 gr.

Mix and rub through a No. 60 sieve, and pack.

Patent and Proprietary Foods

The following notes in regard to some of the leading foods indicate their nature, and are not given as working formulas :—

ALLEN & HANBURYS' FOODS. The paste forms in which these were at first sent out were the invention of Mr. W. R. Dodd, the patents being Nos. 21631 and 21632 of 1891. The casein of part of the milk taken was first precipitated with rennet, heated to destroy the ferment, and mixed with untreated milk and the cream from the first portion. Milk sugar, peptone (flour), and lime-water were then added, and the whole evaporated. The second patent produced a food adjusted for younger children.

CARNRICK'S FOOD. — In this food milk deprived of most of its cream is used, cocoa-butter being added subsequently, and the casein

digested with pancreas (No. 16225 of 1889).

CARNOS, patented by Overbeck, of Grimsby, is prepared by boiling compressed yeast with water till its cell-structure is completely destroyed, then cooling to 60° F., adding from one-sixth to one-half part of germinating malt, and digesting for three hours. Finally the product is boiled for half an hour, adding lime to neutralise and clear the liquor, then concentrating.

CASUMEN is pure casein.

CHAPMAN'S FOOD.—Flour with the bran is heated at 150°–200° F. to burst the starch cells, and afterwards cooked at 80°–100° F. (Patent No. 1203 of 1877).

EUCASIN, produced by Magert & Ewers, Grunau, Berlin, is a casein-ammonia, made by passing ammonia gas over dry and finely powdered casein.

FORCE is prepared from wheat steeped in malt wort for five or six hours at 55°–65° C. The unabsorbed malt wort is drawn off, and the soaked wheat cooked by steam, cooled, dried, and salt added. The product is flaked by passing through steel rollers, and finally the flakes are roasted to obtain crispness and develop an aromatic bread flavour.

HARD'S FARINACEOUS FOOD.—This is wheat flour slightly baked.

HORLICK'S FOOD. — According to Patent No. 3096 of 1883, this is prepared by making a soft mash with milk from equal parts of ground malt, wheat, and oats. This mixture is heated to 150° F. in steam-pans, kept hot for an hour, with constant stirring, to convert the starch into dextrin and grape-sugar. Then it is heated to 170° F. for fifteen minutes and pressed. The resulting fluid is evaporated and powdered.

LIEBIG'S FOOD.—The patent for this was taken out in 1867. Two kinds of food were mentioned—a liquid and a solid. The first is made as follows:—

Fresh skimmed milk .	12,458¼
Wheat flour . .	720
Water . . .	1,440
Ground malt . .	720
Potassium bicarbonate .	21¾

Mix the milk and wheat, and boil for five minutes; then cool to 150° F., add the other ingredients, and maintain the heat for one and a-half hour. Finally boil for two minutes and strain for use.

The solid food is made by evaporation, and when required for use is diluted with boiling skimmed milk.

MELLIN'S FOOD was first manufactured in 1867 at 16 Tichborne Street, Haymarket, London, being afterwards (1877) made on a large scale at Marlborough Works, Peckham. The process is almost identical with that for Horlick's food. Gustav Mellin obtained in 1885 a revocation of Horlick's patent.

NESTLÉ'S FOOD is of the type of Mellin's and Horlick's foods.

PLASMON. — Freshly prepared casein of skimmed milk, after mixing with a sufficient quantity of sodium bicarbonate, is kneaded and dried at 70° C. in an atmosphere of carbonic-acid gas.

RIDGE'S FOOD. — According to Patent No. 2891 of 1862, this is prepared by steam-cooking flour for six to eight hours until it presents a definite taste, &c., the product being dried and powdered. To each pound sodium bicarbonate 2 dr. and sugar ½ oz. are then added, and the food is ready for use.

SANATOGEN.—This is a glycero-phosphate of sodium-casein,

containing 95 per cent. of albumen and 5 per cent. of sodium glycerophosphate. The patent has expired and the name is public property in the United Kingdom.

SANOSE, a continental preparation, is an albumen preparation containing 80 per cent. of casein and 20 per cent. of albumose.

SAVORY & MOORE'S FOOD.—The patent for this was taken out in 1883 by W. R. Barker and A. L. Savory, and requires the following ingredients :—

Wheat flour . .	100 parts
Fresh milk . . .	25 parts
Powdered malt . .	30 parts

The milk is mixed with the flour, cooked at 320° F., and powdered, the malt being then mixed in. The casein of the milk may be predigested by essence of pancreatin.

In 1884 patents were taken out by W. R. Barker, A. L. Savory, and C. Ekin for a predigested food with and without the addition of powdered malt.

SOMATOSE.—This is an artificially digested meat albumen containing 51·6 per cent. of deutero and 13·4 per cent. of hetero albumoses, 5 per cent. of peptone, 11 per cent. of moisture, and 5 per cent. of nutrient inorganic salts. Iron somatose contains in addition 2 per cent. of iron in organic combination. Milk somatose is prepared by the same digestive process from casein containing 5 per cent. of tannin.

Humanised Milk

Cow's milk contains 3½ per cent. of fat and 4·3 per cent. of sugar, human milk 4 per cent. of fat and 7 per cent. of sugar; the proteids (casein) being 4 and 1½ per cent. respectively. To humanise cow's milk means, therefore, to remove or reduce the casein and add the fat and sugar. The following are appropriate methods :—

Frankland's process: Add to ¾ pint of new milk the cream removed from another ⅓ pint, after standing twelve hours. Curdle the ⅓ pint of skimmed milk by placing in it a square inch of rennet for five to fifteen minutes. Separate the whey, heat to boiling, remove the separated casein, and dissolve in the hot whey sugar of milk 110 gr., finally mixing with the cream-enriched portion.

Clague's formula is as follows :—

New milk . . .	30 oz.
Cream	1¾ oz.
Milk sugar . . .	1⅛ oz.
Water	18 oz.

Dissolve.

Fill into bottles and sterilise by placing in cold water, bringing the water to the boil, allowing it to boil for half an hour, corking, and then boiling for another half-hour.

Preservation of Milk for Analytical Purposes

The best plan is to put a single drop of formalin in a clean 8-oz. bottle and pour in milk, it being usual for food inspectors to purchase a pint of milk for analysis, and then to divide it into three portions in 8-oz. bottles. Potassium bichromate is also used for the purpose. J. E. Alén in a patent of 1891 (now void) stated that 0·05 gram of the bichromate prevents curdling of 200 c.c. of milk for twelve days, while 2 grams keeps 500 c.c. for four months.

Mantle-preservative

Cerium oxide . .	℥j.
Thorium nitrate . .	℥j.
Prepared chalk . .	℥ss.
Aniline-magenta . .	gr. ss.
Water to . . .	℥viij.

Mix.

Insect-killing Bottle
(*Cyanide Bottle*)

Put into a wide-mouthed bottle of about 1 lb. capacity 1 oz. of potassium cyanide in pieces the size of a pea, cover the cyanide with plaster of Paris 2 oz. and pour on water 1½ oz. Allow to set hard.

Gelatin Capsules for Bottles

Soak 7 lbs. of good gelatin in 10 oz. of glycerine and 60 oz. of water, then heat over a water-bath until dissolved, and add any desired colour. Pigments may be used, and very beautiful tints can be obtained by the use of aniline colours. Store the jelly in jars.

Modus Operandi.—Liquefy the mass and dip the cork and portion of neck of bottle into the liquid; it sets very quickly.

This composition is particularly useful for capping benzine, liquid glue, glycerine jelly, and other little odds and ends which one wishes to make attractive on the shop-counter, and it is at the same time an 'hermetical seal.'

Grease-proof Boxes

Paper, willow, or turned-wood boxes may be made impervious to air, water, or grease by immersing in hot melted hard paraffin. Another method recommended is to apply inside and out two coats of a varnish made of

Sandarac . . .	2 oz.
White shellac . .	4 oz.
Spirit	10 oz.

Apply with a stiff brush.

Solution of silicate of sodium and kaolin mixed together is used for painting on the inside of turned-wood boxes to make them grease-proof.

Glass-silvering

I

Dissolve 15 gr. of silver nitrate in 5 dr. of water, and add strong solution of ammonia until the precipitate which is at first formed is redissolved. Then add 15 gr. of caustic potash dissolved in 1 dr. of water; a precipitate is again formed, and ammonia solution is to be added until it almost dissolves. Then add a saturated solution of silver nitrate until the solution becomes of a straw-colour. Now place the glass to be silvered in a flat dish (such as a developing-dish), with supports which will raise it about ½ inch from the bottom. Pour water into the dish completely to cover the under-surface of the glass; remove the glass, pour some of the silver solution into the water, stir; then add some solution of pure dextrin, again stir, and replace the glass. A deposit of metallic silver is formed on the surface of the glass in about fifteen minutes.

II

Catechol	1 part
Water	15 parts

Add to silver-nitrate solution (14 per cent. with a slight excess of ammonia) 25 parts.

On adding the silver-nitrate solution a mirror is formed immediately, and is complete in a few minutes.

Icing-powders
(For Wine-cooling)

No. 1

Sodii carb. xtl. . .	12 oz.

No. 2

Ammon. chlor. . .	6 oz.

Dissolve No. 1 in 2 pints of water, and in ten minutes add No. 2.

LABEL-PASTES AND MUCILAGES

Dextrin Mucilage

Dextrin	℥xvj.
Thymol	gr. xv.
Water	℥xviiss.

Dissolve the thymol in a little spirit, mix with the dextrin, and add the water. Heat on a water-bath until dissolved. Allow to settle, skim, and decant.

II

Dextrin	℥vj.
Dilute acetic acid	℥j.
Oil of cloves	gtt. x.
Glycerine	℥j.
Water to	℥xvj.

Mix the dextrin thoroughly with 6 oz. of cold water, add 8 oz. of boiling water; boil five minutes, stirring constantly; add hot water sufficient to make 14 oz. When cool add acetic acid, oil of cloves, and glycerine, the oil of cloves having been mixed with the glycerine beforehand.

III

Dextrin	℥iv.
Acetic acid	℥j.
Methylated spirit	℥j.
Water	℥v.

Mix the dextrin with the water and acid to form a smooth paste, then add the spirit.

IV

Dextrin	lb. ij.
Borax	℥vj.
Glucose	℥v.
Water	Oij. ℥ij.

Dissolve the borax in the water by warming, then add the dextrin and glucose, and continue to heat gently until dissolved. Strain through flannel.

The dextrin used for the foregoing should be the clear amber-coloured stuff or the white powder. The acid in Nos. II. and III. assists in making labels adhere well to tin, but No. IV. is as good for the purpose.

Solid Mucilage

Gelatin	℥ij.
Water	℥iv.

Macerate until soft, then add

Gum arabic	℥iij.
Gum tragacanth	℥ss.
Water	℥vj.
Glycerine	℥j.

Heat on a water-bath until dissolved and a little of the mixture firms on cooling, then add 5 drops of oil of wintergreen, and pour on a slab. When cold, cut into suitable-sized cakes.

Acacia Mucilage

The B.P. mucilage is rather thick. A more adhesive mucilage is made by dissolving 1 part of Ghatti gum in 2 parts of lime-water.

Tragacanth Paste

I

Powdered tragacanth	℥iij.
Powdered acacia	℥j.
Glycerine	℥ij.
Water	℥xxiv.
Perchloride of mercury	gr. xxiv.
Oil of cloves	℥j.

Mix the gums with the water and boil, then add the other ingredients, and mix well.

II

Tragacanth	℥j.
Ghatti gum	℥iv.
Lime-water	℥xvj.

Dissolve and strain; then add

Thymol, in fine powder . gr. xiv.
Glycerine . . . ℥iv.

previously mixed, and make up to 32 oz. with water.

These are excellent adhesive agents, and the best pastes for mounting botanical specimens. No. I., with twice the amount of acacia and 2 pints of water, is used in the Royal Botanic Gardens, Kew.

Flour Pastes

I. Professor Remington's

Wheaten flour . . ℥iv.
Nitric acid . . . ℥j.
Oil of cloves . . . ♏v.
Boric acid . . . gr. x.
Water . . . . ℥xvj.

Mix the flour thoroughly with the boric acid and water, and strain through a sieve to avoid lumps; add the nitric acid, and heat with constant stirring until the mixture has thickened. When nearly cold, add the oil of cloves and stir.

II

Flour . . . . ℥ij.
Powdered starch . . ℥ix.
Salicylic acid . . . ℥ss.
Water . . . . ℥xxxij.

Prepare as No. I.

III

(A)

Brown sugar . . lb. ij.
Boiling water . . ℥xvj.

(B)

French gelatin . . ℥ss.
Water . . . . ℥iv.

(C)

Cornflour . . . ℥xij.
Cold water . . . ℥xij.

Beat up and pour the batter into

Boiling water . . . ℥xxxij.

Continue boiling C, if necessary, until the paste is translucent. Dissolve A and B separately, and then mix with C.

In making flour paste it will be noticed that it becomes stiff and adhesive after boiling for about ten minutes. If one stops at this point a poor product is obtained. The boiling should be continued for at least two hours with constant stirring, a little boiling water being added now and then to help the stirring. Alum, in the proportion of a teaspoonful to the pound of flour enhances the adhesive properties. Bill-stickers use caustic soda, ½ oz. to the pound of flour. Some of the popular stickfast pastes are made similarly; the boiling and stirring are the secret of success, but a little glycerine is also a necessary addition. The following formula is a good one:—

Wheaten flour . . ℥iv.
Water . . . . ℥xvj.
Carbolic acid . . . ♏x.
Oil of cloves . . . ♏x.
Glycerine . . . ℥j.

Proceed as in making Remington's paste, but boil for two hours, replacing the evaporated water occasionally so that the product may weigh 20 oz.

Another good plan for making flour paste is to boil ½ oz. of alum in 8 oz. of water and add 1 oz. of wheaten flour and 4 oz. of water previously mixed. Stir well, and continue the heat until the paste becomes distinctly changed from a white to a clear appearance; then add 8 drops each of creosote and oil of cloves.

Many things have been recommended for making pastes and mucilages more adherent as regards metal surfaces; butter of antimony, honey, and aluminium sulphate are amongst the adjuncts highly spoken of. Their object is to keep the

paste from drying absolutely, but they are not a success, especially as they act on the tinned surface, rapidly corroding it, so that the iron rusts and the label soon becomes stained.

Labels on Tin.

Flour paste is good for tinned surfaces. It should not be too thin, and the tin should be free from grease. New tin generally has an oily or greasy surface, due to the tallow or oil used in the plating-process. The grease may be removed with an alkali or with benzine, but in a factory where much labelling is done it is better to roughen slightly the surface of the tin where the label is to be placed with a piece of fine sand-paper, or coat the tin with a solution of gelatin 1 part in 4 parts of acetic acid, and allow to dry before applying the pasted label. Another plan is to varnish the tin. It is necessary, in applying labels to metal and polished surfaces, to allow the paste to remain on for a minute or so.

The following methods have been strongly recommended by *C. & D.* subscribers:

I

Tragacanth mucilage .	ʒx.
Honey	ʒx.
Wheaten flour . .	ʒj.

Mix.

First damp the labels, then apply the above, and affix. Allow to dry in a cool place.

II

Mix sodium-silicate solution with water until it is of the consistency of thin syrup. Use this to affix the labels.

Drawer-labels

The paper labels are affixed in the following manner:—Paste eight labels or so, and apply the first one to the drawer. Rub smooth with a clean cloth. When dry apply a thin coating of the following solution with a flat camel-hair brush:—

Isinglass . . .	℥ss.
Water	℥x.

Dissolve and add

Rectified spirit . .	ʒvj.

When this coating is dry, apply in the same manner a coating of varnish. Gold labels are put on shop-rounds in this way also.

Glasscine Labels are attached thus:—Cut a piece of cardboard to the size wanted from the bottom of the label to the bottom of the bottle, bend the cardboard around bottle and mark on the bottle at the edge of the cardboard, with chalk or hard soap, a line, to insure that the labels are placed alike on the bottles. Paste the bottle with any good paste on a space larger than the label. Place the label in position on the bottle and apply over the label a larger piece of paper. The paper will adhere to the paste and the bottle outside the label. Rub the paper down tight and smooth on the edge of the label: this will hold the label in position until dry. After the paste is dry, soak off the paper with water and clean with a dry cloth.

For Preserving Mucilages and pastes use hydronaphthol, chinosol, or salicylic acid in the proportion of $\frac{1}{5}$ gr. to 1 gr. per oz. Formalin ♏j. to the ounce is best of all.

The Paste-pot

Use an ordinary 3-lb. white glazed jar fitted with a tin lid, through the centre of which a hole is bored for the brush. About 1 inch from the top two holes are drilled opposite to each other (by a

china-mender) and a piece of brass wire passed through these, which acts as a scraper for the brush. Such a pot is always clean and the paste in good condition.

A simpler plan is to tie string across the top of the jar, and chip a semicircle out of the lid to accommodate the brush.

The difficulty of keeping paste is met by making small quantities frequently, washing the brush and utensil each time of filling. Formalin keeps it for two months.

Syndetikon

Sugar	℥vj.
Water	℥xviij.

Dissolve by boiling, and add with constant stirring to the hot solution

Sifted slaked lime	℥iss.

Set aside for a few days to settle, and decant the clear solution. In it soak

Gelatin	℥vj.

for twenty-four hours, then heat on a water-bath until dissolved.

Match-head Compositions

I. New French

Phosphorus sesquisulphide	6 parts
Potassium chlorate	24 parts
Zinc-white	6 parts
Red ochre	6 parts
Powdered glass	6 parts
Glue	18 parts
Water	34 parts

Make a paste.

II. Ordinary (For Vestas)

Vitreous phosphorus	12 parts
Grey sulphide of antimony	3 parts
Lead binoxide	36 parts
Gum arabic	14 parts
Water	10 parts
Colouring	a sufficiency

Make a paste.

III. Ordinary (For Matches)

Amorphous phosphorus	6 parts
Sulphur	8 parts
Potassium chlorate	15 parts
Lead binoxide	36 parts
Manganese dioxide	9 parts
Glue	8 parts
Powdered glass	6 parts
Kieselguhr	6 parts
Water a sufficiency to form a paste	

IV. Safety

Antimony sulphide	2 to 3 parts
Potassium chlorate	6 parts
Glue	1 part
Water a sufficiency to make a paste	

The rubbing-surface is a mixture of amorphous phosphorus, antimony sulphide, and glue.

For further and full information, see Thorpe's 'Dictionary of Applied Chemistry' (1912), vol. iii., p. 404.

Oil for Clocks and Watches

I

Place a coil of clean lead in a white-glass bottle and fill with almond oil. Expose to the sun until all the curdy matter is deposited. Decant the clear oil, and to every 6 oz. of it add 1 oz. of the best cod-liver or seal oil.

II

Black oxide of antimony	℥j.
Small shot	℥iv.
Almond oil	℥xx.

Expose in a white-glass bottle to sunlight for a month, shaking occasionally, and decant the clear oil.

Oil of Rhodium (Factitious)

(For Baiting Purposes)

I

Oil of copaiba	℥j.
Oil of almonds (expressed)	℥j.
Otto of rose	♏x.
Oil of rose-geranium	♏x.

Mix.

II

Oil of sandalwood .	ʒss.
Oil of rose-geranium .	ɱxv.
Oil of almonds (expressed)	ʒiss.

Mix.

Fox Oils

Ol. animalis and ol. succini, alone or mixed. Used for applying to sheep to ward off foxes.

Oilskin

The oil used is a mixture of boiled linseed oil and 10 per cent. of its volume of gold-size or other drier. Calico receives three coats of the mixture, each coat being allowed to dry in the air for several days before the next is applied.

Oil for Surgical Instruments

Put a handful of small shot into a pint of liquid cocoanut oil, shake frequently in the course of a month, settle, and separate the clear part.

For use, saturate a piece of chamois-leather with the oil, and rub the steel parts of the instruments with it. Prevents rusting, but the instruments must be cleaned before use.

Paper Formulas

Copying-paper.—Make a paste with lampblack (or, for blue paper, powdered Prussian blue) and equal parts of castor oil and lard. Rub this well into soft unglazed paper for a few seconds, leaving a layer of paste upon the paper; set aside for a day, and then rub off the superfluous paste.

Gummed Paper.—Printers use a mixture of gum arabic 8 parts and tragacanth 1 part, with water q.s.

Tracing-paper.—Select good unsized white paper. Place a quire of it on a flat surface and brush with a varnish composed of equal parts of Canada balsam and oil of turpentine. Hang up each sheet to dry. If to be used for ink, afterwards wash with ox-gall, and dry.

Waxed Tissue-paper is made by passing the paper through hot cylinders smeared with paraffin or Japan wax. Or a warm flat-iron is smeared with wax and applied to a pad of the paper, each sheet of which is then hung up by itself.

Pharaoh's Serpents

Sulphocyanide of mercury	ʒij.
Prussian blue . . .	gr. v.
Compound tragacanth powder . . .	gr. xv.

Mix well, mass with water and divide into twenty-four pieces, form each into a small cone, and dry.

These are in Part 2 of the Poisons Schedule of Great Britain. Those made with nitre, bichromate of potassium, and sugar are useless.

Pick-me-up

I

Spt. chloroformi . .	ʒss.
Spt. ammon. arom. .	ʒss.
Tr. gentianæ co. . .	ʒj.
Tr. cardam. co. . .	ʒij.
Syrupi	ʒij.
Aq. ad	ʒij.

M. Pro dose.

II

Angelica-root . . .	ʒiiss.
Gentian-root . . .	ʒj.
Orange-peel . . .	ʒss.
Winter's bark . . .	ʒj.
Cinnamon . . .	ʒj.
Rectified spirit . .	ʒxxxij.
Water	ʒxlviij.

Make a tincture by maceration, and add

Glycerine . . .	ʒij.
Tincture of lemon . .	ʒj.
Tincture of saffron . .	ʒiss.
Tincture of capsicum .	ʒiss.
Marsala	ʒxij.
Malaga	ʒxij.
Brandy	ʒxxiv.

After standing six weeks filter.

III

Cascarilla	ʒj.
Gentian-root	ʒj.
Cardamom-seeds	ʒss.
Lemon-peel	ʒss.
Orange-peel	ʒss.
Ginger	ʒss.
Cinnamon	ʒij.
Cochineal	ʒij.
Aromatic spirit of ammonia	ʒv.
Proof spirit	ʒxv.

Reduce the drugs to No. 40 powder, and make a tincture by maceration for four days. Strain, press, and filter, and to the filtrate add

Spirit of chloroform	ʒij.
Sherry	ʒv.
Syrup	ʒx.
Water to make the whole	Oij.

Mix.

Dose: An ounce with as much water.

IV. For Headache

Caryoph.	ʒij.
Rad. valerian.	ʒiv.
Cocci cacti	ʒj.
Liq. am. fort.	ʒiss.
Spt. vin. rect.	ʒxij.
Aq. destil.	ʒxij.

Macerate for a week; then add

Ammon. brom.	ʒiss.
Potass. brom.	ʒiss.

Set aside for another week. Filter, and make up to 24 oz. with water.

Dose: ʒij. in water. Usually relieves headache in ten minutes.

V. Soberers

A

Acid. hydrocyanic. dil., B.P.	mvj.
Spt. ammon. arom.	ʒij.
Aq. ad	ʒij.

M. Pro dose.

B

Acid. acetic. dil.	ʒss.
Aq.	ʒij.

Mix and add

Pulv. ammon. carb.	℈j.

Drink while effervescing.

Roach-paste

Mix with bread-paste carmine for red, and turmeric for yellow bait.

Soldering-fluid

Muriatic acid (commercial)
Zinc a sufficiency (to neutralise)
Sal ammoniac . ʒj. to each ʒj.

Filter through a piece of lint or cotton-wool.

A little powdered resin sprinkled on the article (previously cleaned with emery cloth) to be soldered assists materially.

Books on Soap-manufacture

'A Practical Treatise on the Manufacture of Soap and Candles.' By W. T. Brannt. Published by Sampson Low, Marston & Co. (Limited). 8vo. 35*s.*

'Soaps and Candles.' Edited by James Cameron. Published by J. & A. Churchill. Small 8vo. 7*s.*

'The Art of Soap-making.' By Alexander Watt. Published by Crosby Lockwood & Co. Crown 8vo. 7*s.* 6*d.*

'Soaps. A Practical Manual of the Manufacture of Domestic, Toilet, and other Soaps.' By George H. Hurst. Published by Scott, Greenwood & Co. 12*s.* 6*d.*

Some directions for home manufacture of soap, and formulas for soap perfumes, are given in the Supplementary Chapter.

Resin-soap

Yellow resin . . .	ʒiij.
Caustic soda . . .	ʒv.
Water	Oj.

Boil for two hours, evaporate to dryness, and powder.

This soap is used as an emulsifying agent; *e.g.* :—

Resin-soap . . .	gr. x.
Water	ʒj.
Fixed oil . . .	ʒj.

Dissolve the soap in the water, and shake with the oil; or—

Resin soap . . .	gr. x.
Essential oil . . .	ʒij.
Water to . . .	ʒiij.

Dissolve the soap in 1 oz. water, shake with the oil, and add the rest of the water with shaking.

The soap is also used in making such things as creolin, themselves clear solutions, but becoming perfect emulsions when a considerable volume of water is mixed with them.

Schlippe's Salt

Dissolve 74 parts of sodium carbonate in 250 parts of water by boiling; add a milk of 26 parts of lime and 85 parts of water, and, after five minutes' boiling, 36 parts of powdered black antimony and 7 parts of sublimed sulphur. Continue to boil until the grey colour disappears. Filter, and evaporate the filtrate to crystallisation-point. The crystals are Schlippe's salt, which is used in photography.

Sponge-bleaching

The simplest way to bleach sponges which have become faded is to wash them well, then immerse in a bath made by dissolving 2 dr. of potassium permanganate and 2 oz. of hydrochloric acid in 2 gals. of water. A few minutes' immersion suffices to make the sponges almost white; then remove, press, and wash in cold water, finally soaking in an alkaline bath (potassium carbonate 1 lb. to 2 gals.) to restore the colour. Aniline orange is sometimes used finally.

Sponge-powder

Dried carbonate of sodium	ʒxvj.
Metasulphite of sodium .	ʒss.

Mix.

A teaspoonful to a quart of hot water.

Dr. F. W. Andrewes cleans and sterilises surgical sponges with a solution as follows:—

Ammonium persulphate	37 grams
Distilled water .	950 c.c.
Hydrochloric acid .	11 c.c.

Allow to stand for four days.

This is virtually a solution of hypochlorous acid which kills bacilli and their spores in a few minutes when the sponges are immersed in the solution, which should not be used after it is a month old.

Steel-welding Composition

Borax	ʒvj.
Sal ammoniac . . .	ʒij.
Potassium ferrocyanide .	ʒj.
Iron filings . . .	ʒss.

Powder and mix with water to form a paste. Allow to stand for a few hours, then dry and powder.

The Goldschmidt process depends upon the reduction of oxides to the metallic state by means of powdered aluminium, mixed with a small quantity of igniting-powder (magnesium with barium peroxide or one of the chlorates). An account of the process was given in the *C. & D.*, 1901, I., 367. *See* also the Supplementary Chapter, p. 950.

Tobacco Flavours or Perfumes

For Cut Tobacco

I

Valerian	ʒss.
Cascarilla	ʒij.
Tonka bean	ʒj.
Orris-root	ʒss.
Proof spirit	Oj.

Macerate for a week and filter.

II

Valerianic acid	ɱx.
Heliotropin	℈j.
Essence of musk	ʒij.
Essence of apricot	ʒvj.
Rum, 20 o.p.	ʒxij.

Mix.

For Cigarettes

Calamus	ʒij.
Orris-root	ʒvj.
Essence of white rose	ʒvj.
Mitcham oil of lavender	ɱxx.
Oil of rose-geranium	ɱXL.
Alcohol (70-per-cent.)	Oij.

Exhaust the powdered solids by percolation with the alcohol to 2 pints, and add the other ingredients.

Tobacco-paper for Fumigation

Nitre	ʒj.
Tobacco-juice	Oj.

Dissolve. Dip unsized paper in the solution, and dry in a warm room.

Tattoo-marks (To Remove)

Apply nitric acid with the stopper of the bottle or a glass rod to cover the stain. In from a minute and a half to ten minutes, when the 'cutis vera' is penetrated and there is a crusted appearance, wash off with cold water. A few days after this treatment a scab forms, which contains the tattoo-mark or stain; remove it, and should inflammation supervene poultice and bathe with warm water. It may be noted that the scab begins to form on the second day, when the inflammation is subsiding. It is then advisable to cover with court-plaster until the scab forms completely, then poultice with boiled bread-and-milk until thoroughly clean, and dress with carbolic oil (1 in 20) or boric ointment. In this way the skin with the stain is not only removed almost painlessly, but at the same time the nitric acid to a certain extent seems to decolorise the stain.

Another plan is to anæsthetise the washed and shaved part with ethyl-chloride spray, and tattoo glycerol of papain into the coloured parts. Follow this with a dressing of glycerol of papain, antiseptic gauze, and adhesive plaster. Keep this on for three days without disturbing, then cover with adhesive plaster. A scab forms, and when it drops off the marks have generally disappeared.

See also *C. & D.*, 1913, II., 408.

Water-softener

Slaked lime	ʒj.
Dried carbonate of sodium	ʒij.

Reduce both to fine powder and mix.

'Anti-calcaire' contains alum, lime, and sodium carbonate. It was patented. *See also* p. 503.

Waxes

White, for Laundries

Bleached Carnauba wax	1 lb.
White hard paraffin	2 lbs.
White ceresine	4 lbs.

Melt together, and add a handful of fullers' earth; stir up, and strain through good flannel.

White, for Fly-hooks

Beeswax	ʒj.
Resin	ʒviij.

Melt, and simmer for ten minutes; then add

Tallow	ʒj.

Pour into a basin of water and

work it with the fingers until pliable, pulling it as a shoemaker pulls his 'wax,' and the longer the better. *Pennell's recipe* is:—Burgundy pitch 6, resin 3, tallow 1, prepared without water and pulling.

Bottle

Blue.—Common brown resin, 8 lbs.; melt and add 1½ oz. vermilion rubbed down with 1 oz. cotton-seed oil, and 2 oz. zinc-white and 8½ oz. ultramarine rubbed down with cotton-seed oil 10 oz.

Green.—Resin, 4 lbs.; tallow, 6⅓ oz.; Bremer blue, 2 oz.; ochre, 2 oz.; prepared chalk, 1 oz.; resin oil, 1 oz. Prepare as above, rubbing down the powders with the melted tallow and resin oil.

Red.—Resin, 4 lbs.; tallow, 1 lb.; vermilion (or red-lead), 6 oz.; resin oil, 3 oz. Prepare as above.

Yellow.—Resin, 10 lbs.; tallow, 1 lb.; chrome yellow, 10 oz.; prepared chalk, 2 oz.; resin oil, 5 oz. Prepare as above.

NOTE.—Tolu-syrup residues can be worked up as resin in making the above.

For the best quality carefully melt together in a clean copper pan

Shellac	3 lbs.
Venice turpentine	1¼ lb.

Then add

Vermilion	1 lb.

For black wax use 1½ lb. of lampblack. A little Peru balsam is sometimes included, and camphor or spirit to increase readiness of burning.

Modelling

I

Beeswax, lead plaster, olive oil, and common resin, of each equal parts. Melt and stir in half the total weight of Armenian bole.

II

Hard paraffin, 10 oz.; Venice turpentine, 1 oz.; lard, 2 oz. Melt and stir in sifted kaolin 6 oz.

Wicks

(Non-charring)

Dip in a strong solution of sodium tungstate and dry.

(Non-smouldering)

Dip in a saturated solution of borax and dry.

Worm Cake (Gingerbread)

Pulv. zingiberis	℥j.
Pulv. cassiæ	℥ss.
Sodii bicarb.	℥j.
Hydrarg. subchlor.	℥ij.
Theriacæ	℥viij.
Farinam tritici ad	℥xx.

Mass and divide into 20-gr. cakes (each containing calomel 2 gr.), and bake.

PHOTOGRAPHIC CHEMICALS AND PREPARATIONS

Summary.—Gelatino-bromide Plates—Developers (notes and working formulas)—Intensifiers—Reducers—Fixing and Clearing Baths—Varnishes and Backings—Papers and Toners—Iron-printing Processes—Platinotype-paper Developers—Mountants—Miscellaneous

THIS section begins with formulas for bromide-plates, and these are given not with the idea that chemists will ever make more than experimental batches of photographic plates, but to indicate the process in outline so that chemists may have an intelligent knowledge of the goods they handle, especially in respect to the theory of development. Plates are now prepared on such an enormous scale by special machinery that it is impossible to produce them on the small scale at a price that will compete. The recipes on p. 530 are intended for small experimental batches, but it should be noted that on the manufacturing scale the emulsion is separated by centrifugal machines, and the whole of the spreading of the finished emulsion is carried on in a dustless atmosphere, and practically in the dark, by means of automatic contrivances.

Plates to be used for gelatin emulsion are first coated with the following

Substratum Coating

Nelson's gelatin	60 grains
Water	8 oz.
Dissolve and add—	
Chrome alum solution (2 per cent.)	2 dr.
Filter through paper.	

GELATINO-BROMIDE PLATES

W. K. Burton's Formula

A

Silver nitrate	200	grains
Water	3	oz.

Dissolve.

B

Potassium bromide	160	grains
Potassium iodide	10	grains
Gelatin (Nelson's No. 1)	40	grains
Hydrochloric acid	2½	min.
Water	3	oz.

Dissolve.

C

Hard gelatin	150	grains

D

Hard gelatin	150	grains

The gelatin in B is allowed to soften in a little water. At the same time water may be poured over the lots of gelatin C and D to let them swell. A and B are now heated to 120° F., and A is poured into B slowly with vigorous stirring. The emulsion thus formed is allowed to stand for ten minutes with occasional stirring. Meantime as much of the water as possible in gelatin C is squeezed out. After ten minutes the emulsion (having been allowed to remain without stirring for at least two minutes, to allow any granular silver bromide which may have been formed to subside) is poured over C, heat being, if necessary, applied to melt the gelatin. When the gelatin and the emulsion are thoroughly incorporated, the jar containing them is set on one side to allow the whole to set into a stiff jelly. When set, the emulsion is squeezed through canvas, washed thoroughly, and well drained. Next D is added, and the whole 'melt,' and ½ oz. alcohol added. The emulsion is now ready for coating plates.

Mr. Burton states that this quantity of emulsion will coat a dozen 10 by 8 plates.

Abney's Formula

1

Potassium iodide	5	grains
Water	1	drachm

Dissolve.

2

Potassium bromide	135	grains
Hydrochloric acid	1	min.
Water	1½	oz.

Dissolve.

3

Nelson's No. 1 photographic gelatin	30	grains

Quickly wash with water and drain, then add 1 oz. of water, allow to stand for ten minutes, and dissolve by heat.

4

Silver nitrate	175	grains
Water	½	oz.

Dissolve and warm to 120° F.

5

Hard gelatin and No. 1 gelatin, equal parts	140	grains

Rapidly wash with water, then add 2 oz. of water, allow to stand for ten minutes, and melt at 100° F.

In the dark-room add No. 3 to No. 4, well shaking, then add three-fourths of No. 2, drop by drop, well shaking after each addition. Next add gradually No. 1 and the rest of No. 2. The emulsion is now of a ruby colour, and is ripened by immersing the jar containing it in a water-bath for forty-five minutes, shaking every half-minute or so.

When boiled sufficiently, the colour will have changed to yellow. When cooled to 70° or 80° C. add No. 5, and let the emulsion set; then squeeze through mosquito-netting or coarse canvas beneath the surface of water, and wash the threads of emulsion by dousing with water. After soaking for half an hour, repeat the straining and washing and drain for two hours on a sieve, when the emulsion is ready for re-melting and the addition of ½ oz. of absolute alcohol.

If extreme rapidity is required, to each ounce of emulsion add 1 minim of strong ammonia solution diluted to 10 minims with water, and keep the emulsion at 90° F. for two hours. The final operation is filtration through swansdown or cotton-wool, when the emulsion, warmed to 120° F., is ready for use.

DEVELOPERS

In compounding developers the main things to keep in mind are to use distilled water and take great care that organic matter does not come in contact with the reducing-agent. If the solution containing the developing-agent must be filtered, asbestos or glass wool should be employed as the filtering-agent.

The following short notes on the various developing-agents in use are arranged in chronological order, the formulas that follow being in alphabetical order for convenience of reference.

Pyrogallic Acid, or Pyrogallol.—First employed for developing gelatino-bromide plates by Dr. Maddox in 1871, and still the favourite with most workers in photography. The average quantity of 'pyro' used to each ounce of water for a developer is 1½ grain, with '·880' ammonia solution (rarely now) or sodium carbonate 24 grains, and sodium sulphite 24 grains. Representative formulas are given later.

Ferrous Oxalate.—Introduced as a developer by Carey Lea in 1877, but the solution now in use was suggested by Eder in 1879.

Hydroquinone, or Quinol.—Discovered to have developing-powers by Sir William Abney in 1880. Is a favourite developing-agent with amateurs. Works best when used with potassium carbonate or hydrate, but sodium carbonate or tri-sodium phosphate as the alkali gives softer negatives. The average composition of the developer is 3 grains quinol in each ounce, with potassium bromide ½ grain, sodium sulphite 15 grains, and potassium hydrate 4 grains.

Pyrocatechin, or Catechol, was found by Eder and Toth in 1880 to have developing-power. The solution does not discolour so readily as quinol. With sodium hyposulphite it has been recommended for use in cases where it is desired simultaneously to develop and fix negatives. 'Kachin' is the trade-name for a mixture of catechol, potassium hydrate, and sodium sulphite.

Eikonogen, the sodium salt of amido-beta-naphthol sulphonic acid, was discovered by Professor Meldola in 1880, and found by Andresen in 1889 to possess developing-power. The salt is best dissolved in hot water.

The proportions for each ounce of developer are eikonogen 9 grains, sodium sulphite 35 grains, potassium carbonate 23 grains.

Metol.—Andresen's metol is methyl-para-amido-phenol; Hauff's metol is a homologue, methyl-para-amido-meta-cresol. The average quantity of metol in an ounce of developer is $2\frac{1}{2}$ grains, with potassium bromide $\frac{3}{4}$ grain, sodium sulphite 24 grains, and sodium carbonate 18 grains.

Para-amido-phenol, patented in 1891, is sent out as the hydrochloride. When exactly sufficient caustic alkali is added to convert the salt into a phenolate, the concentrated liquid is known as 'rodinal.' Rodinal requires to be diluted with from twenty to thirty times its bulk of water before use.

Glycin, or para-oxy-phenyl-glycin, is a slow developer, but most suited for line negatives in process-work, and for 'stand' development.

Amidol, or diamido-phenol hydrochloride, was first made by Gauche in 1869, but patented as a developer in 1892. The developer should be freshly made by dissolving the amidol in solution of sodium sulphite. The average proportions are amidol $1\frac{1}{2}$ grain, sodium sulphite 48 grains, and potassium bromide $\frac{1}{2}$ to $1\frac{1}{2}$ grain in each ounce.

Diphenal, or di-amido-oxy-di-phenol, is made as a liquid, and requires dilution with from fifteen to twenty times its volume of water for use.

Adurol is the chloro- or bromo-derivative of hydroquinone. The average composition of an ounce of adurol developer is adurol 4 grains, sodium sulphite 20 grains, potassium carbonate 24 grains, and potassium bromide $\frac{1}{4}$ grain.

Imogen Sulphit is eikonogen modified by the introduction of another amido group and mixed with sodium sulphite.

Edinol, the hydrochloride of para-amido-oxy-benzyl-alcohol, does not require the use of caustic alkali. Resembles metol in its action, but is more soluble.

Working Formulas for Developers

Adurol Developer

A

Adurol . . .	170 grains
Sodium sulphite .	$3\frac{1}{2}$ oz.
Water to . . .	20 oz.

Dissolve.

B

Potassium carbonate .	$2\frac{1}{2}$ oz.
Water to . . .	20 oz.

Dissolve.

For use, mix in equal parts.

Adurol Developer

(One-solution)

Adurol . . .	1 oz.
Sodium sulphite .	3 oz.
Potassium carbonate .	6 oz.
Water to . . .	20 oz.

Dissolve.

For use, dilute with 3 to 5 parts of water.

Amidol Developer

Amidol . . .	48 grains
Sodium sulphite .	$\frac{1}{2}$ oz.
Water to . . .	20 oz.

Dissolve.

Stolze's Amidol Developer

A

Potassium metasulphite	360 grains
Amidol	90 grains
Water to	4 oz.

Dissolve.

B

Potassium bicarbonate	310 grains
Water to	4 oz.

Dissolve.

For use, mix 1 drachm of each with 1 oz. of water.

Catechol Developer

A

Catechol	180 grains
Sodium sulphite	2 oz.
Water to	20 oz.

Dissolve.

B

Potassium hydrate	95 grains
Water to	20 oz.

Dissolve.

Mix 1 part each of A and B with 2 parts of water.

Vogel's Pyrocatechin Developer

A

Pyrocatechin	1 oz.
Sodium sulphite	5 oz.
Water	25 oz.

Dissolve.

B

Sodium phosphate	14 oz.
Sodium hydrate	1 oz.
Water	62 oz.

Dissolve.

For use, mix equal parts of A, B, and water.

Kachin Combined Developer and Fixer

A

Kachin	2 oz.
Sodium sulphite	8 oz.
Sodium hydrate	2 oz.
Water to	20 oz.

Dissolve.

B

Sodium hyposulphite	4 oz.
Water to	20 oz.

Dissolve.

For use, mix 12 parts of A, 20 parts of B, and 30 parts of water.

Diogen Developer

Diogen	90 grains
Sodium sulphite	480 grains
Potassium carbonate	480 grains
Potassium bromide	3 grains
Water to	20 oz.

Dissolve.

Edinol Developer

A

Edinol	96 grains
Sodium sulphite	2 oz.
Water to	20 oz.

B

Sodium carbonate	960 grains
or	
Potassium carbonate	480 grains
Water to	20 oz.

For use, mix equal parts.

Edinol Developer
(One-solution)

Sodium sulphite	4 oz.
Water	10 oz.

Dissolve and add

Edinol	1 oz.
Sodium carbonate	5 oz.
Water to	20 oz.

For use, dilute with from five to ten times the volume of water.

Eikonogen Developer

A

Eikonogen	80 grains
Sodium sulphite	80 grains
Water to	20 oz.

Dissolve.

B

Sodium carbonate	800 grains
Potassium hydrate	100 grains
Water to	20 oz.

For use, mix in equal proportions.

Eikonogen Developer

(One-solution)

Eikonogen	½ oz.
Potassium carbonate	1 oz.
Sodium sulphite	2 oz.
Water to	20 oz.

Dissolve.

Eikonogen-Quinol Developer

Eikonogen	120 grains
Quinol	40 grains
Sodium sulphite	4 oz.
Potassium hydrate	1 oz.
Water to	20 oz.

Dissolve.

For use, dilute with an equal volume of water.

Mixtol Developer

Quinol	15 parts
Eikonogen	10 parts
Potassium ferrocyanide	20 parts
Potassium carbonate	75 parts
Potassium hydrate	15 parts
Potassium bromide	1 part
Sodium sulphite	120 parts
Glycerine	1 part
Water	1,000 parts

Dissolve.

Ferrous-oxalate Developer

A

Ferrous sulphate	5 oz.
Sulphuric acid	30 drops
Water to	20 oz.

Dissolve.

B

Potassium oxalate (neutral)	5 oz.
Potassium bromide	10 grains
Water to	20 oz.

Dissolve.

For use, add 1 oz. of A to 4 oz. of B.

Abney's Developer

(For Gelatino-chloride Plates)

Potassium citrate	50 grains
Ferrous oxalate	12 grains
Water to	1 oz.

Dissolve.

Cowan's Developers

(For Gelatino-chloride Lantern-plates)

1. *Cold Tones*

Potassium citrate	1,000 grains
Potassium oxalate	300 grains
Water to	10 oz.

2. *Warm Tones*

Citric acid	900 grains
Ammonium carbonate	600 grains
Water to	10 oz.

3. *Extra Warm Tones*

Citric acid	1,280 grains
Ammonium carbonate	400 grains
Water to	10 oz.

To 3 parts of 1, 2, or 3 add 1 part of the following :—

Ferrous sulphate	1,200 grains
Sulphuric acid	10 drops
Water to	10 oz.

Glycin Developer

A

Glycin	350 grains
Sodium sulphite	2½ oz.
Water to	20 oz.

Dissolve.

B

Potassium carbonate	2 oz.
Water to	20 oz.

Dissolve.

For use, mix 1 oz. of A with 2 oz. of B.

Glycin Developer

(Concentrated)

Glycin	1 oz.
Potassium bromide	20 grains
Potassium carbonate	5 oz.
Sodium sulphite	5 oz.
Water to	20 oz.

Dissolve.

For use, mix 1 part with 3 parts of water.

Imogen-sulphite Developer

A

Imogen sulphite	1 oz.
Water	11 oz.

B

Sodium carbonate	5 oz.
Water	10 oz.

For use, mix 2 parts of A with 1 part of B.

Metol Developer

A

Metol	100 grains
Sodium sulphite	2 oz.
Potassium bromide	12 grains
Water to	20 oz.

Dissolve.

B

Potassium carbonate	2 oz.
Water to	20 oz.

Dissolve.

For use, mix 3 oz. of A with 1 oz. of B.

Just's Metol Developer

(For Bromide-paper)

A

Metol	60 grains
Sodium sulphite	600 grains
Water	12½ oz.

Dissolve.

B

Potassium or sodium carbonate	600 grains
Water	12½ oz.

Dissolve.

C

Potassium bromide	600 grains
Water	12½ oz.

For sepia tones use A 6 parts, B 1 part, C $\frac{1}{12}$ part, water 84 parts.

Red tones, A 6 parts, B 1 part, C $\frac{1}{6}$ part, water 140 parts.

Black tones, A 60 parts, B 10 parts, C $\frac{1}{12}$ part.

Metol Developer

(One-solution)

Metol	150 grains
Sodium sulphite	2 oz.
Potassium carbonate	2 oz.
Water to	20 oz.

Dissolve.

For use, mix with an equal volume of water.

Metol-Glycin Developer

Metol	40 grains
Glycin	60 grains
Sodium sulphite	2½ oz.
Potassium carbonate	2½ oz.
Water to	20 oz.

Dissolve.

Metol-Quinol Developer

A

Metol	80 grains
Quinol	50 grains
Sodium sulphite	2 oz.
Water to	20 oz.

Dissolve.

B

Sodium carbonate	1 oz.
Potassium bromide	60 grains
Water to	20 oz.

Dissolve.

For plates, use equal parts of A and B. For paper, add to the mixture an equal volume of water.

Metol-Quinol Developer

(One-solution)

I

Metol	50 grains
Quinol	40 grains
Sodium sulphite	1 oz.
Sodium carbonate	1 oz.
Potassium bromide	25 grains
Water to	20 oz.

Dissolve.

II

Metol	25 grains
Quinol	40 grains
Potassium metasulphite	100 grains
Potassium bromide	8 grains
Potassium carbonate	1 oz. 20 gr.
Water to	10 oz.

Dissolve the metol and quinol in 6 oz. of water, add the metasulphite and bromide, dissolve, and strain. Dissolve the salt of tartar in the rest of the water and mix the two solutions.

For use, dilute with an equal part of water. For bromide-papers use 2 parts of water to 1 of developer.

Elliott's Developer

(For Platino-matt Bromide-paper)

Metol	200 grains
Sodium sulphite	6 oz.
Quinol	150 grains
Potassium bromide	50 grains
Potassium carbonate	2 oz.
Water	80 oz.

Dissolve the metol in the water first, and then the other ingredients in the order given.

Metol-Quinol Developer

(Dry)

A

Metol	100 grains
Quinol	50 grains
Sodium sulphite (anhydrous)	2 oz.

B

Sodium carbonate (anhydrous)	½ oz.
Potassium bromide	60 grains

Pack in glass tubes.

Each powder is to be dissolved in 20 oz. of water to form a developer.

Ortol Developer

A

Ortol	150 grains
Potassium metasulphite	75 grains
Water to	20 oz.

Dissolve.

B

Sodium carbonate	3½ oz.
Sodium sulphite	2½ oz.
Potassium bromide	10 grains
Water to	20 oz.

Dissolve.

For use, mix equal parts of A and B, and for paper add twice as much water.

Para-amido-phenol Developer

Para-amido-phenol hydrochloride	60 grains
Sodium sulphite	60 grains
Sodium carbonate	400 grains
Water to	20 oz.

Dissolve.

Pyro-Acetone Developer

Pyrogallol	90 grains
Sodium sulphite	1 oz.
Acetone	2 oz.
Water to	20 oz.

Dissolve.

Pyro-Amine Developer

Pyrogallol	100 grains
Sodium sulphite	½ oz.
Trimethylamine (33 %)	1¼ oz.
Water to	20 oz.

Dissolve.

Pyro-Ammonia Developer

A

Pyrogallol	80 grains
Ammonium bromide	100 grains
Nitric acid	4 drops
Water to	20 oz.

Dissolve.

B

Strong ammonia solution	3 drachms
Water to	20 oz.

Dissolve.

For use, mix equal parts.

Pyro-Metol Developer

A

Pyrogallol	55 grains
Metol	45 grains
Potassium metasulphite	120 grains
Potassium bromide	15 grains
Water to	20 oz.

Dissolve.

B

Sodium carbonate	4 oz.
Water to	20 oz.

Dissolve.

For use, mix equal parts.

Pyro-Potash Developer

A

Pyrogallol	1 oz.
Sodium sulphite	4 oz.
Sulphurous acid	3½ oz.
Water to	12 oz.

Dissolve.

B

Potassium carbonate	3 oz.
Potassium bromide	48 grains
Sodium sulphite	2 oz.
Water to	12 oz.

Dissolve.

For use, mix 1 drachm each of A and B with 1 oz. of water.

Beach's Developer

A

Sodium sulphite	2 oz.
Sulphurous acid	2 oz.
Pyrogallol	½ oz.
Water	2 oz.

Dissolve the sulphite in the water, add the sulphurous acid, and, lastly, the pyrogallol.

B

Sodium sulphite	2 oz.
Potassium carbonate	3 oz.
Water	7 oz.

Dissolve.

For an ounce of normal developer, mix 1 drachm each of A and B, and make up to 1 oz. with water.

Stolze's Pyrogallol Developer

A

Sodium sulphite	2 oz.
Pyrogallol	6 drachms
Sulphuric acid	8 drops
Water	8 oz.

Dissolve.

B

Potassium carbonate	3 oz.
Sodium sulphite	6 drachms
Water	7 oz.

Dissolve.

Use equal parts of each.

Pyro-Soda Developer

A

Pyrogallol	80 grains
Nitric acid	4 drops
Water to	20 oz.

Dissolve.

B

Sodium carbonate	2 oz.
Sodium sulphite or potassium metasulphite	2 oz.
Potassium bromide	20 grains
Water to	20 oz.

Dissolve.

For use, mix equal parts.

Pyro-Soda Developer

(Concentrated)

A

Pyrogallol	160 grains
Nitric acid	8 drops
Water to	20 oz.

B

Sodium carbonate	4 oz.
Sodium sulphite	4 oz.
Sodium bromide	40 grains
Water to	20 oz.

For use, mix 2 drachms of each, and dilute with an equal volume of water.

(Dry)

A

Pyrogallol	80 grains
Sodium sulphite (anhydrous)	1 oz.

B

Sodium carbonate (anhydrous)	1 oz.
Potassium bromide	20 grains

Pack in glass tubes or in waxed paper, finally dipping the package in melted paraffin wax.

Each powder is dissolved in 20 oz. of water.

Quinol Developer

A

Quinol	160 grains
Sodium sulphite	320 grains
Water to	20 oz.

B

Sodium hydrate	80 grains
Potassium bromide	40 grains
Water to	20 oz.

For use, mix equal parts.

(Concentrated)

A

Quinol	1 oz.
Sodium sulphite	2 oz.
Water to	20 oz.

B

Sodium hydrate	½ oz.
Potassium bromide	120 grains
Water to	20 oz.

For use, mix 80 drops of A and the same of B, and add water to make 1 oz.

(One-solution)

Quinol	60 grains
Sodium sulphite	2 oz.
Sodium carbonate	4 oz.
Potassium carbonate	2 oz.
Potassium bromide	40 grains
Water to	20 oz.

(Crystallos)

Sodium sulphite	8 oz.
Potassium ferrocyanide	2⅔ oz.
Quinol	1½ oz.
Potassium hydrate	2 oz.
Water to	28 oz.

Dissolve the first three ingredients in 20 oz. of water, then add the potassium hydrate and make up to measure.

For use, dilute 1 part to 5-8 parts of water.

In France a similar developer is sold coloured red with an aniline dye.

(Dry)

A

Quinol	40 grains
Potassium metasulphite	¼ oz.
Potassium bromide	5 grains

B

Lithium carbonate	40 grains

Wrap separately in waxed paper and tinfoil, or put into separate glass tubes. The two powders are dissolved in 10 oz. of water to form a developer.

Quinol-Formalin Developer

Quinol	140 grains
Sodium sulphite (anhydrous)	3 oz.
Formalin	96 drops
Water to	20 oz.

Separate Development

I

Metol	5 grams
Hydrokinone	5 grams
Sodium sulphite	100 grams
Water	1,000 c.c.

II

Potassium carbonate	100 grams
Water	1,000 c.c.

Two tanks are used: one is filled with No. I., the other with No. II. The plates (which may be developed twelve at a time) are placed in a metal rack, immersed in the No. I. tank, moved up and down a few times in order to dislodge air-bells, and are left for thirty seconds. The rack is then removed and placed in the potash solution for another thirty seconds. The plates are then rinsed and fixed.

Combined Developer and Fixer

A

Sodium hyposulphite	20 grams
Potassium hydrate	10 grams
Potassium metasulphite	3 grams
Water	200 c.c.

B

Sodium hyposulphite	20 grams
Sodium sulphite	10 grams
Sodium carbonate	20 grams
Sodium hydrate	4 grams
Potassium metasulphite	3 grams
Water	200 c.c.

C

Sodium hyposulphite	20 grams
Potassium hydrate	2 grams
Sodium carbonate	10 grams
Potassium metasulphite	3 grams
Water	200 c.c.

Just before use the developing-agents are added: To A quinol 2 grams, and to B or C edinol 2 grams.

Solubilities of Developing-agents

Quinol	6	grams in 100 c.c. of water at 15° C.
Eikonogen	7·8	
Ortol	7·4	
Metol	5	
Pyrogallol	59	
Paramidophenol	36	

All are less soluble in sodium-sulphite solution except pyrogallol, which is about the same.

The following are the names of some other developers which are either mixtures of well-known developers or are not now on the market:—

Kinonaphthol.—'A combination of hydroquinone and eikonogen, with the salts of soda and potash,' introduced in 1891.

Kinocyanine.—'Formed during the preparation of Paris blue.' Introduced in 1891.

Ixol.—Described in 1891.

Phanerogene.—A French developer discovered in 1892.

Dinol.—Introduced in 1898.

Tolidol.—An American product.

Eurodin. — A metol-and-quinol developer.

Hydronal. — A cartridge developer.

Metogen. — A combination of metol and quinol introduced in 1899.

INTENSIFIERS

Copper Intensifier

A

Potassium bromide	3 drachms
Water	10 oz.

Dissolve.

B

Copper sulphate	4 drachms
Water	10 oz.

Dissolve.

Mix and decant the clear solution. After bleaching the negative with this solution it is blackened with weak ammonia solution or any ordinary developer.

Eder and Toth's Lead Intensifier

A

Lead nitrate	200 grains
Potassium ferricyanide	300 grains
Water	10 oz.

Dissolve.

B

Ammonium - sulphide solution	1 oz.
Water	9 oz.

Mix.

Soak the plate in solution A till bleached, wash well, and blacken with solution B. Finally wash thoroughly.

Farmer's Intensifier

A

Silver nitrate	1 oz.
Water	12 oz.

Dissolve.

B

Potassium bromide	6 drachms
Water	2 oz.

Dissolve.

Add B to A, collect the precipitate, wash, and add to

Sodium hyposulphite	2 oz.
Water	6 oz.

After standing a few hours, make up to 16 oz.

The plate is immersed in this solution for five minutes, drained, developed with ferrous-oxalate developer, and washed.

Gaedicke's Intensifier

Ammonium sulphocyanide	1 oz.
Silver nitrate	20 grains
Sodium sulphite	½ oz.
Sodium hyposulphite	48 grains
Potassium bromide	6 grains
Water	2 oz.

Dissolve.

To intensify a negative, mix

Solution as above	6 drachms
Rodinal	2 drachms
Water	6 oz.

Dissolve.

Lumière's Mercuric-iodide Intensifier

Mercuric iodide	96 grains
Sodium sulphite	4 oz.
Water	20 oz.

Mix, and keep in the dark.

The plate is soaked in the solution till sufficiently dense.

Monkhoven's Intensifier

A

Potassium bromide	100 grains
Mercuric chloride	100 grains
Water to	10 oz.

Dissolve.

B

Potassium cyanide	100 grains
Silver nitrate	100 grains
Water to	10 oz.

Dissolve.

Immerse the negative in A till white, then transfer to B.

Uranium Intensifier

Uranium acetate	120 grains
Acetic acid	½ oz.
Potassium ferricyanide	50 grains
Water	6 oz.

Dissolve.

Wellington's Silver Intensifier

A

Silver nitrate	1½ oz.
Water	18 oz.

B

Ammonium sulphocyanide	3 oz.
Sodium hyposulphite	3 oz.
Water	18 oz.

Add sufficient B to 1 oz. of A to just redissolve the precipitate, and to each ounce of the mixture add 3 grains of pyrogallic acid and 6 drops of ammonia.

After treatment in the bath, the plate is fixed for a minute and well washed.

Wortley's Mercuric Intensifier

A

Mercuric chloride	1 oz.
Ammonium chloride	1 oz.
Water	20 oz.

Dissolve.

B

Solution of ammonia	1 oz.
Water	20 oz.

Dissolve.

Immerse the negative in A till white, wash in running water for a quarter of an hour, immerse in the ammonia solution till black, and finally wash to free the negative from ammonia.

This mercuric intensifier is the one which is most used, the formula being varied somewhat by different workers. Hydrochloric acid or sodium chloride is sometimes used in place of the ammonium chloride in solution A. In place of solution B, sodium sulphite (1 in 10), ferrous-oxalate developer, any alkaline developer, or Schlippe's salt (1 in 40) may be used.

REDUCERS

Bartlett's Reducer

Ferric chloride	30 grains
Citric acid	60 grains
Water	20 oz.

Dissolve.

Belitzki's Ferric-oxalate Reducer

Ferric-chloride solution (B.P.)	120 grains
Potassium oxalate	180 grains
Sodium sulphite	120 grains
Oxalic acid	35 grains
Sodium hyposulphite	¾ oz.
Water	7 oz.

Add the iron solution to the water, and dissolve therein the other ingredients in the order given.

Ammonium-persulphate Reducer

is a 3 to 5 per cent. solution of the persulphate. The negative must be previously well washed. The action of the reducer is arrested by dipping the plate into solution of sodium sulphite.

Bichromate Reducer

Potassium bichromate	200 grains
Hydrochloric acid	100 drops
Water	10 oz.

Dissolve the bichromate of potassium in the water, and add the hydrochloric acid. Strain through glass-wool.

Cyanide Reducer

Potassium cyanide	20 grains
Potassium iodide	10 grains
Mercuric chloride	10 grains
Water	10 oz.

Dissolve.

Eau-de-Javelle Reducer

Chlorinated lime	2 oz.
Potassium carbonate	4 oz.
Water	30 oz.

Dissolve the potash salt in 10 oz. of the water, triturate the chlorinated lime with the remainder, mix the two liquids, and filter.

The plate is immersed in this solution till sufficiently reduced; it is then fixed and well washed.

Eder's Reducer

A

Ferric chloride	1 part
Water	8 parts

Dissolve.

B

Potassium oxalate	2 parts
Water	8 parts

Dissolve.

To use, mix equal parts and add a small quantity of concentrated solution of sodium hyposulphite.

Farmer's Reducer

A

Potassium-ferricyanide solution	1 in 10

B

Sodium-hyposulphite solution	1 in 10

For use, add a few drops of A to 1 oz. of B, and apply by means of a camel-hair pencil.

Farmer's Reducer

(Haddon's modification)

Potassium ferricyanide	5 grains
Ammonium sulphocyanide	10 grains
Water	1 oz.

Dissolve.

Jareckl's Reducer

(Modification of Belitzki's)

Ferric-chloride solution	2 drachms
Potassium oxalate	3 drachms
Sodium sulphite	2 drachms
Oxalic acid	35 grains
Sodium hyposulphite	1 oz. 6 drachms
Water	7 oz.

Dissolve.

Haddon and Grundy have shown that if a plate is taken out of the fixing-bath, and left for some time without washing, part of the silver is dissolved in the sodium thiosulphate. This may be regarded as a simple way of reducing negatives, and as a warning not to allow fixed plates to remain long in the air without washing them.

Enlarging Negatives

Immerse the plate in the following solution:—

Sodium fluoride	1 drachm
Citric acid	9 drachms
Water	7 oz.

When the film is detached, wash and place on a larger glass plate to dry.

FIXING AND CLEARING BATHS

Eder's Acid Fixing-bath

Sodium hyposulphite (1 to 5)	40 oz.
Sodium sulphite (1 to 4)	2½ oz.
Tartaric acid (1 to 2)	6 drachms

Mix the sodium-sulphite and tartaric-acid solutions together, and add to the sodium-hyposulphite solution.

Lainer's Acid Fixing-bath

Sodium hyposulphite (1 to 5)	30 oz.
Sodium-bisulphite solution (1 to 5)	1½ oz.

Mix.

Wall's Acid Fixing-bath

Citric acid	½ oz.
Sodium sulphite	2 oz.
Sodium hyposulphite	8 oz.
Water to	40 oz.

Mix.

Concentrated Fixing-bath

Sodium hyposulphite	4 lbs.
Water	44 oz.

Heat in an enamelled saucepan till dissolved, strain through absorbent cotton-wool, and make up to 80 oz. Each 5 oz. of this solution equals 4 oz. of solid sodium hyposulphite.

Clearing-bath

Hydrochloric acid	½ oz.
Alum solution (saturated)	20 oz.

Wash the negative for five minutes before immersing in above solution.

Cowell's Clearing-bath

Alum	1 oz.
Citric acid	2 oz.
Water	10 oz.

Wash after fixing and immerse the negative in above.

VARNISHES AND BACKINGS

Negative-varnish

I

White hard spirit-varnish,
Spirit . . . equal parts

Mix, and filter through animal charcoal.

II. Burton's

Sandarac	2 oz.
Venice turpentine	½ oz.
Oil of turpentine	1 oz.
Spirit	20 oz.

Shake occasionally until the resin dissolves, then filter.

III

Sandarac	½ oz.
Acetone	2½ oz.
Absolute alcohol	1½ oz.
Benzine	10 drachms

Macerate for a week and filter.

IV

White hard varnish	20 oz.
Spirit	20 oz.
Castor oil	½ drachm
Oil of lavender	½ drachm

Mix.

v. Valenta's

Manilla copal	2 oz.
Epichlorhydrin	7 oz.

Digest on a water-bath till dissolved, then add

Alcohol (absolute)	10 oz.

Filter.

VI

White shellac	3 oz.
Gum benzoin	1½ oz.
Gum elemi	½ oz.
Alcohol	25 oz.

This varnish takes the retoucher's pencil well.

Black Varnish for Stopping-out

I

Sandarac	½ oz.
Shellac	1 oz.
Spirit	10 oz.
Lampblack	2 oz.

Mix.

II

Asphalt	3 oz.
Guttapercha	20 grains
Lampblack	½ oz.
Benzine	10 oz.

Dissolve the first two in the benzine, strain, and add the lampblack.

Matt-varnish

	I	II
Sandarac	℥j.	℥iss.
Mastic	℥iss.	℈j.
Ether	℥x.	℥v.

Dissolve and add

Benzine or toluol	℥iv.	℥j.

Retouching Varnish or Medium

I

Resin	1½ oz.
Dammar	2 drachms
Oil of turpentine	8 oz.

Dissolve and filter.

Redistilled oil of turpentine only should be used.

II. Luckardt's

Sandarac	5 oz.
Camphor	½ oz.
Castor oil	1 oz.
Venice turpentine	½ oz.
Spirit	30 oz.

Dissolve and strain.

Teape's Backing

(For Preventing Halation)

Mucilage	1 oz.
Caramel	1 oz.
Burnt sienna (ground in water)	2 oz.

Mix well and add

Spirit	2 oz.

Backing-fluid

Hard soap (in shavings)	½ oz.
Spirit	10 oz.

Digest at a temperature not exceeding 70° F., agitating occasionally, for seven days; filter, and dissolve in the filtrate

Erythrosin	50 grains
Aurin	50 grains

There is considerable art in making a caramel which shall be uniform and permanent (see p. 273). On the manufacturing scale glucose is the raw material, the Asrymusry process (long kept secret) being used, and caustic or carbonated alkali added according to the use to which the finished product is to be put.

PAPERS AND TONERS

Preparing Matt Gelatin-papers

A

Emulsion gelatin	25 grams
Water	400 c.c.
Ammonium chloride	2 grams

Dissolve.

B

Silver nitrate	14 grams
Water	50 c.c.

Dissolve.

C

Citric acid	3 grams
Water	50 c.c.

Dissolve.

The solutions are warmed to 50° C., and in a weak light B is run into A, and the mixture kept well stirred while C is added. Next the emulsion is filtered through flannel, and baryta-paper coated with it by floating for one minute. Care must be taken that no air-bells are present. To dry, the sheets are suspended in a moderately warm place. After two or three hours the paper is ready for use.

A combined bath answers for the fixing and toning.

Concentrated Toning-bath for P.O.P.

Gold chloride	10 grains
Ammonium sulphocyanide	200 grains
Water to	20 oz.

Dissolve the gold salt in 10 oz. of water and add to it the ammonium sulphocyanide dissolved in 10 oz. of water. For use, 2 oz. of the bath is diluted to 10 oz. with water.

Lead Toning-bath

Lead acetate	15 grains
Sodium hyposulphite	2 drachms
Water	20 oz.

Dissolve.

The toning is due to sulphuration, and the prints are probably not permanent.

Lead-and-Gold Toning-bath

Lead nitrate	60 grains
Sodium chloride	80 grains
Sodium hyposulphite	1 oz.
Gold chloride	2 grains
Water	20 oz.

Dissolve.

Gives black tones, but print must be fixed in the ordinary bath afterwards.

Platinum Toning-bath

Potassium chloroplatinite	15 to 30 grains
Lactic acid	3 drachms
Water	35 oz.

Mix.

Ferguson's Copper Toning-bath

(For Bromides)

Potassium citrate (10-per-cent.)	250 c.c.
Copper sulphate (10-per-cent.)	35 c.c.
Potassium ferricyanide (10-per-cent.)	30 c.c

Combined Toning and Fixing Bath

I

Sodium hyposulphite	20 oz.
Citric acid	½ oz.
Lead nitrate	½ oz.
Ammonium sulphocyanide	2 oz.
Water	80 oz.

Dissolve in the water (warm) in above order, filter bright, and add

Gold chloride	12 grains

II

Sodium hyposulphite .	8 oz.
Ammonium sulphocyanide . . .	1 oz.
Sodium acetate . .	½ oz.
Water . . .	32 oz.

Mix and add

Ammonium chloride	30 grains
Gold chloride . .	15 grains
Water . . .	8 oz.

The prints are immersed in the bath without previous washing.

III

Sodium hyposulphite .	3½ oz.
Lead acetate . .	40 grains
Gold chloride . .	5 grains
Water to . . .	20 oz.

Dissolve the hypo and lead salt in the water, set aside for two days, filter, and then add the gold chloride.

Half-pint bottles of this sell for 1s. The directions should be:—'Prints should be rather deeper than required when finished. Immerse the prints in the solution for from ten to fifteen minutes until the desired tone is obtained, and finally wash for an hour in running water.'

IV. Eastman's

A

Sodium hyposulphite	8 oz.
Potash alum . .	6 oz.
Water . . .	80 oz.

Mix and add

Borax . . .	2 oz.
Water . . .	8 oz.

Let stand overnight, and decant.

B

Gold chloride . .	15 grains
Lead acetate . .	64 grains
Water . . .	1 oz.

Do not filter.

For use, mix 8 parts of A with 1 of B, and immerse the prints without previous washing, the temperature of the bath not to exceed 50° F.

V

Sodium hyposulphite	100 oz.
Lead acetate . .	8 oz.
Calcium chloride .	8 oz.
Calcium carbonate .	4 oz.
Gold chloride (1-per-cent. solution) .	12 oz.
Water . . .	2½ gals.

Dissolve.

VI. Vogel's Combined

—	1	2	3
Ammonium sulphocyanide .	28	24	30
Lead acetate .	10	—	—
Lead nitrate .	10	10	12
Citric acid . .	8	—	—
Alum . .	8	20	—
Gold-chloride solution (1-per-cent.)	40	100	100
Sodium hyposulphite . .	250	180	250
Water . .	1000	1000	1000

The reactions in most of the combined toning and fixing baths are complicated. Acids act on sodium thiosulphate, yielding sulphur, sulphuretted hydrogen, sulphurous acid, and sodium sulphate, but the first product is acid sodium thiosulphate, which splits up into the other sulphur compounds. Alum reacts with the sodium thiosulphate to form aluminium thiosulphate, which in turn yields aluminium sulphate and sulphuretted hydrogen. The secondary reactions take place slowly, so that in making up the baths hot water is used to hasten the process.

FERRO-PRUSSIATE OR IRON-PRINTING PROCESS

White Lines on Blue

A

Potassium ferricyanide 600 grains
Water . . . 5 oz.

B

Green ammonio-citrate of iron . . . 600 grains
Water . . . 5 oz.

Dissolve the salts separately, then mix, and keep the solution in the dark.

The paper is sensitised by floating and dried in the dark. Expose under the negative till all the details are visible. Develop by washing with water.

This gives blue prints, weak caustic soda produces a faint yellow, tannin changes the yellow to black, alkalies alter the black to red-brown, while dilute acids change to bluish-black. Other changes in the colour can be produced by silver nitrate, mercuric nitrate, potassium chromate, sodium sulphide, and potassium permanganate.

Fisch's Formula

Tartaric acid . . 3 oz.
Water . . . 13 oz.

Dissolve and add

Ferric-chloride solution (sp. gr. 1·45) . 2 oz.

Then add

Solution of ammonia (not more than 6 oz.) a sufficiency till neutral

Finally add, with constant shaking.

Potassium ferricyanide 2 oz. 205 grains
Water . . . 13 oz.

Mix.

Blue Lines on White

Pellet's Process

A

Gum arabic . . 88 grains
Water . . . 1 oz.

Dissolve.

B

Ammonio-citrate of iron . . . 220 grains
Water . . . 1 oz.

C

Ferric chloride . . 220 grains
Water . . . 1 oz.

For use, mix 20 of A with 8 of B and 5 of C.

Ferro-gallic Process

Sensitiser

Gelatin . . . 14 grains
Ferric chloride (syrupy) 29 grains
Ferric sulphate . . 14 grains
Tartaric acid . . 14 grains
Water . . . 1 oz.

Dissolve.

Developer

Gallic acid . . 1 part
Water . . . 320 parts

Dissolve.

Brown-line Process

(Arndt and Troost)

Ammonio-citrate of iron . . 35–44 grains
Tartaric acid . . 7–9 grains
Gelatin . . . 4–7 grains
Silver nitrate . . 5–9 grains
Water . . . 1 oz.

Dissolve.

The sensitised paper keeps for several months.

PLATINOTYPE PRINTING

Platinum-paper Developers

—	I	II	III
Potassium oxalate, neutral	300	900	135
Potassium phosphate	—	30	50
Sodium sulphite	—	4	4
Glycerine	375	—	—
Water	1000	960	960

No. I. gives blackish-brown tones, while II. and III. tend to blue-black tints.

In developing platinum prints the bath is heated to between 100° and 180° F., 140° being a usual temperature. The fixing (or clearing) bath is a mixture of hydrochloric acid ʒj. in water ℥x.

IV. *Developer for Brown Tones*

A

Potassium oxalate	1 oz.
Water	7 oz.

Dissolve.

B

Potassium citrate	75 grains
Citric acid	2 drachms
Mercuric chloride	45 grains
Water	7 oz.

Dissolve.

Mix in equal proportions for use. The clearing-bath should be half strength (hydrochloric acid 2 drachms, water 20 oz.).

MOUNTANTS

Dextrin Mountant

I

White dextrin	2 oz.
Spirit	1 oz.
Boiling water	6 oz.

Dissolve the dextrin in the water, and when nearly cold add the spirit.

II

Dextrin	3 lbs.
Borax	6 oz.
Glucose	5 oz.
Water	42 oz.

Dissolve the borax in the water, mix well with the dextrin and glucose, and heat till solution takes place. Set aside for three or six months to ripen.

Gelatin Mountant

Gelatin	1 oz.
Spirit	3 oz.
Water	3 oz.
Glycerine	2 drachms
Carbolic acid	10 drops

Make a solution.

Higgins' Mountant

This is the subject of several British patents. The first one (22682/92) protects a combination of dextrin and water equal parts, to which borax equal to an eighth of the dextrin used, and ammonia 20° B., or caustic-soda lye 40° B., equal to from one-sixteenth to one forty-eighth of the bulk of the mucilage are added. It is claimed that a chemical combination of the borax and dextrin takes place. The next patent (17337/95) is for a plain mucilage of white dextrin in warm water, which is left to mature for a long period into a 'fluid softly coherent paste.' The proportion of dextrin is 6 lbs. to a gallon of water at a temperature not below 100° or above 160°. Patent-specification 2746/97 is for an 'improved composition of dextrin dissolved in hot water, and having borax or its equivalent dissolved therein and combined therewith

after the dextrin solution has cooled.' The use of hydrogen peroxide for bleaching the product and a caustic alkali or alcohol (2 to 5 per cent.) for thickening is mentioned. Another patent (9108) of the same year is for a dry form of mountant.

Dry Mounting.—In this method paper or a part of the mount is previously varnished and, the print having been put in place, is subjected to heat in a press; this softens the resins in the varnish and makes perfect contact between the print and mount. The resinified paper is made by brushing fine tissue paper with a solution of white shellac 30 grams, gum elemi 3 grams, Canada balsam 5 grams in alcohol 100 c.c.

MISCELLANEOUS

Black for Sheaths

First scour the tin sheaths with dilute sulphuric acid, and then boil them in a mixture of—

Sodium hyposulphite	6 drachms
Copper sulphate	4 drachms
Water	20 oz.

Dead Black

(For the Interior of Cameras, &c.)

Borax	1 drachm
Glycerine	1 drachm
Shellac	2 drachms
Water	10 oz.

Boil together until dissolved, strain, and add

Nigrosin	2 drachms

Blackening Aluminium

Ferrous sulphate	1 oz.
Arsenic	1 oz.
Hydrochloric acid	12 oz.
Water	12 oz.

Dissolve.

Clean the metal thoroughly with fine emery paper, wash, and immerse in the above solution. When sufficiently coloured, dry with sawdust, and lacquer.

To Make Gold Chloride

Thin sheet gold	50 grams
Sodium chloride	15 grams
Nitric acid	40 c.c.
Hydrochloric acid	160 c.c.

Place in a porcelain dish on a sand-bath and dissolve. Cover the dish with a funnel to prevent waste during the process of solution. After dissolving the gold, evaporate till the salt begins to crystallise on the sides of the dish. Then add 5 c.c. of aqua regia diluted with 50 c.c. of water, so as to ensure a slightly acid product, and dilute to 1,000 c.c. A solution is thus obtained which contains 10 per cent. of gold chloride, equivalent to 5 per cent. of metallic gold.

Lubricant for Burnishing Prints

Castile soap	20 grains
Alcohol	5 oz.

Blackening Brass

A

Silver nitrate	40 grains
Water	2 drachms

B

Copper nitrate	40 grains
Water	2 drachms

Dissolve separately and mix.

Dip the clean brass in the mixture and allow to dry; then heat strongly on a sand-bath or over a Bunsen burner. Repeat if necessary.

Light-filter

(For Dark-room Lamps)

Mandarin orange (G extra)	4 grams
Potassium - chromate solution (6-per-cent.)	500 c.c.

GALENICAL AND MEDICINAL PREPARATIONS

Summary.—The formulas in this chapter are arranged in the following order :—

Aceta
Acida
Aquæ
Balsama
Buginaria
Capsulæ
Carbasi
Cerata
Chartæ
Chlorodyna
Chloroformi
Collodia
Collyria
Confectiones
Cremores
Drink-cures
Eaux
Elixirs
Embrocationes
Emplastra
Emulsiones
Essentiæ
Extracta
Gargarismata
Gelata
Glycerina
Granular Preparations
Guttæ
Infusa
Inhalationes
Injectiones
Insufflationes
Lactes
Linctus
Linimenta
Liquores
Lotiones
Misturæ
Misturæ pro Tussi
Mucilagines
Nebulæ
Oleata
Olea
Pastæ
Pessi
Pilulæ
Pulveres
Sales
Sapones
Saponismata
Spiritus
Steatina
Suppositoria
Syrupi
Tabellæ
Tincturæ
Unguenta
Vina

In many cases the preparations are arranged in alphabetical order according to the proper name—*e.g.*, 'Bates' alum-water' in the B's and 'Cramp-draught' in the C's; but a hard-and-fast classification according to the kind of preparation is tedious to make, and, with a complete index, is unnecessary.

OUTSIDE the British and other Pharmacopœias are many formulas for articles, some of which are ordered by physicians, and some are popular medicines. Besides these two classes are a large number of formulas for medicines which are novel, or which may never become official, and many which are not used by themselves as medicines, but as adjuvants or excipients. The object of this chapter is to bring these together. The following abbreviations show the source of semi-official formulas :—

A.Ph.F. = 'Australian Pharmaceutical Formulary.'

B.F. indicates the formulas of the Bournemouth Pharmaceutical Association's 'Formulary.'

B.P.C. = formulas from the 'British Pharmaceutical Codex,' published by the Pharmaceutical Society of Great Britain (Second Edition, 1911), which includes the formulas from the 'British Pharmaceutical Conference Formulary' (here indicated by Br.P.C., although 'B.P.C.' was original to them), as well as from this volume and other works.

C.F., or 'Canadian Formulary,' of the Ontario College of Pharmacy.

D.A.V. represents the formulas of the Deutsche Apotheker-Verein's 'Ergänzungsbuch,' III. (1906).

G.F., the formulary compiled by the Glasgow and West of Scotland Chemists' Association.

N.F., or 'National Formulary,' published by the American Pharmaceutical Association.

N.H. indicates formulas for medicines used in the Naval Hospitals of the British Empire.

Also included here and in the Supplementary Chapter are formulas for 'known, admitted, and approved remedies' with serial numbers subsequent to those in the supplementary volume—*e.g.*, 'Cold-mixture,' P.F. 6.

A.C.E. Anæsthetic Mixture
(*Vapor Chloroformi Co.*, B.P.C.)

Absolute alcohol	℥j.
Chloroform	℥ij.
Ether	℥iij.

Acetum Camphoræ

Camphor	ʒij.
Rectified spirit	℥iiss.
Distilled wine-vinegar to	℥xxv.

Dissolve the camphor in the spirit and shake with the vinegar; strain through absorbent cotton.

Acetum Camphoræ Fortius

Camphor	℥j.
Rectified spirit	ʒj.
Glacial acetic acid	℥x.

Powder the camphor with the help of the spirit and dissolve it in the acid.

(An old pharmacopœial substitute for Henry's Aromatic Vinegar used for vinaigrettes.)

Acetum Carbolicum

Crystallised carbolic acid	ʒx.
Camphor	ʒj.
Rectified spirit	℥iss.
Dilute acetic acid	℥x.

Dissolve the camphor in the spirit and add to the acids previously mixed. Shake well.

Acetum Lobeliæ

Powdered lobelia-seeds	℥iv.
Dilute acetic acid	℥xxxij.

Macerate for seven days, press, filter, and add to the filtrate 1 oz.

of rectified spirit, or dilute acetic acid to make 32 oz.

Acetum Sanguinariæ is made in the same manner.

Acetum Opii
(syn. *Black Drop*)

Powdered opium .	100 grams
Nutmeg in No. 30 powder . .	30 grams
Sugar . . .	200 grams
Dilute acetic acid to	1,000 c.c.

Macerate the opium and nutmeg in half the acid for seven days, strain, and press. Mix the marc with 200 c.c. of the acid, strain, and press. Mix the liquors, filter, dissolve the sugar in the filtrate, and wash the filter with acid to make 1,000 c.c.

This is from the U.S.P. It is also B.P.C. Formerly contained saffron. A similar preparation is official in the German and French Pharmacopœias, but there is also a vinegar, made by macerating 1 part of opium in 6 parts of dilute acetic acid. Preparations like the latter were formerly in the Dublin and Edinburgh Pharmacopœias.

Acetum Rosæ

Dried rose-petals . .	ʒiij.
Distilled wine-vinegar .	ʒxviij.
Rectified spirit . .	ʒiv.

Macerate for eight days and filter.

This form is a common Continental one for making vinegars of various herbs, and may be followed in the case of Aceta Arnicæ, Belladonnæ, Digitalis, Rutæ, and Sabadillæ. Dilute acetic acid may be used in place of vinegar, although the odour is not so nice as that of true white-wine vinegar.

Acetum Staphisagriæ

Stavesacre-seeds, bruised .	ʒiiss.
Dilute acetic acid . .	ʒxx.

Macerate for eight days and filter.

Used in making lotions for pediculi.

Acidum Carbolicum Camphoratum
(*Carbolated Camphor*)

Acid. carbolic. xtl. .	ʒxij.
Camphor. . . .	ʒiv.
Aquæ	ʒj.

Rub together until liquid.

Acidum Carbolicum Iodatum
(*Iodophenol or Iodised Phenol*)

Various strengths are used. (*a*) The Continental and N.F. preparation is made by rubbing down 1 part of iodine with a mixture of crystallised carbolic acid 3 parts and glycerine 1 part; (*b*) for cauterising, a mixture of iodine 1 part and crystallised acid 4 parts is used; and (*c*) for making lotions, a solution of iodine ℈ij. in acid. carbolic. liq. ʒj.—1 dr. of this being diluted with a pint of water to make a vaginal injection.

Acidum Hydrobromicum
(Fothergill, 'B.M.J.,' July 8, 1876)

Bromide of potassium	11 oz. 375 gr.
Water . . .	2 pints

Dissolve.

Tartaric acid . .	14 oz. 212 gr.
Water . . .	2 pints

Dissolve.

Mix the solutions, shake well, and after standing all night filter.

Dilute Hydriodic Acid is made in the same way (*see* p. 771). Acid. Hypophosph. Dil., U.S.P., 1890, was thus made: Dissolve 208 grams of potassium hypophosphite in 588 grams of water, and separately 300 grams of tartaric acid in 600 grams of proof spirit; mix in a flask, cork, set

aside twelve hours in a cool place; decant carefully through cotton-wool, weigh the filtrate, evaporate on a water-bath to get rid of the spirit, and when cold restore to the original weight by adding water. Sp. gr. 1·060=10 per cent. H_3PO_2. N.F. gives for 30 per cent. acid: potassium hypophosphite 483, tartaric acid 682, diluted alcohol a sufficiency to wash the precipitate free from hypophosphorous acid, and water to 1000 by weight. Acid. hypophos., Br.P.C., is made by decomposing barium hypophosphite (8 oz.) with sulphuric acid (17 oz. dilute acid) in presence of water (36 oz.), filtering, washing with hot water, and evaporating the filtrate to 11½ oz. by weight. Sp. gr. 1·1367 = 30 per cent. H_3PO_2. Acid. Hypophos. Dil., B.P.C., is hypophosphorous acid 30 per cent. ℥vj., distilled water to ℥xx.

Acide Sulphonitrique Dilue.—Rabelais' formula is: Nitric acid 2 parts by weight, sulphuric acid 4 parts by weight. Add the sulphuric acid gradually to the nitric acid contained in a good glass flask kept cool on ice; mix well. To make the dilute acid add 6 parts of the above by weight to 300 parts of distilled water.

Æther Camphoræ

Same strength as spt. camph., B.P.—*i.e.*, 1 in 10, made with ether.

Æther Ozonieus

Sir B. W. Richardson, who introduced ozonic ether, directed it to be made by shaking together equal parts of 30-vol. hydrogen peroxide and pure ether, and decanting the ethereal layer for use. Martindale states ('Extra Pharmacopœia') that it is 'ether containing in solution peroxide of hydrogen of 30-volume strength, with some alcohol.' It may be made as follows:—Mix together in a large flask 1 part of barium peroxide and 50 parts of pure ether—both by weight—keeping the flask in ice or iced water; then add gradually a mixture of 2 parts of hydrochloric acid and 8 parts of water, still keeping the contents as near freezing-point as possible. Allow the action to proceed for an hour, and decant the ethereal liquid.

Æther Phosphoratus

Made by macerating 1 part of phosphorus in small pieces in 50 parts, by weight, of pure ether for a month, and decanting. A French preparation—teinture éthérée de phosphore. Dose: Three to four drops.

Dr. Alabone's Prescriptions

Some of these will be found in *The Chemist and Druggist*, 1902, I., 20, chiefly sprays. They are all more or less of a cypher nature.

Alcohol Deodoratum, C.F.

The U.S. method is followed. *See* p. 184.

Amyli Iodidum

Iodide of starch, or, properly iodised starch, was introduced by a Dr. Buchanan about sixty years ago, and was stated by him (*London Medical Gazette*, xviii. 515) to be made as follows :—

'Rub 24 grains of iodine with a little water, and gradually add one ounce of finely powdered starch; dry by a gentle heat, and preserve the powder in a well-stoppered bottle.'

The preparation is still occasionally required, and is given in doses beginning at half a teaspoonful. It is also, and chiefly, used externally. It was official in the U.S.P., 1880, being made by triturating 5 parts of iodine and a little water with 95 parts of starch, and this is now *Amylum Iodisatum*, B.P.C.

A soluble form of the preparation is made by dissolving 5 parts of iodine in a mixture of 5 parts of ether and 10 parts of alcohol, triturating with 95 parts of powdered dextrin, and drying at a gentle heat. This is Amyli Iodidum Solubile.

AQUÆ AROMATICÆ

In the preparation of aromatic waters by other methods than those recognised by the 'British Pharmacopœia' the oldest and commonest plan is represented by the following two formulas :—

Aqua Carui

Ol. carui . . .	ʒss.
Spt. rectificat. . .	ʒss.
Mag. carb. levis . .	q.s.
Aq. ad	Oij.

Dissolve the oil in the spirit, pour upon about half an ounce of the magnesia in a mortar, stir, gradually add the water, and filter.

Aqua Menthæ Piperitæ

Ol. menth. pip. . .	ʒiss.
Mag. carb. levis . .	ʒj.
Aq. destillatæ . .	Cong. j.

Triturate the oil with the magnesia and gradually add the water. Shake well for ten minutes, and filter.

The waters so produced are contaminated with magnesium carbonate, and when dispensed with certain substances the appearance of the preparations is not what it would be with strictly B.P. waters. Calcium phosphate is not so objectionable, yet it partly dissolves. Aquæ Medicatæ, B.P.C. (1908), were so made—viz., oil 2, calcium phosphate 4, water 1,000. Talc and fullers' earth, carefully purified by washing with hydrochloric acid and water and drying, are better, while asbestos, kaolin, and kieselguhr have advantages over other substances. Cotton-wool and paper pulp have also been proposed as substitutes for the magnesia. The 'Canadian Formulary'

recommends 1 part of the essential oil to be triturated with 2 parts of calcium phosphate (or purified talc) and 500 of distilled water added; then filter. In this way are prepared anise, caraway, cinnamon, dill, fennel, peppermint, pimento, rose, and spearmint waters. It should be noted that all these substances help to make clear waters because they divide the oil, so assisting solution, and absorb and keep back part of the oil. It may be taken as approximately near the truth that water will dissolve essential oil in the proportion of 1 to 500; but the British Pharmacopœia requires only 1 in about 850 for aq. menth. pip., and such a formula as that given above almost meets the pharmacopœial requirement as to strength. The magnesia is the chief objection. In the case of aq. carui the presence of spirit is an additional objection, for experience shows that it is slowly oxidised, acetic acid and aldehyde being formed, both of which sensibly modify the aroma of the water. To get rid of these objections aromatic waters may be made extemporaneously from the oils by shaking a drachm of the oil with half a gallon of hot water in a Winchester quart bottle and setting aside until cold, when the clear water should be decanted.

Concentrated Waters, so called, are solutions of the essential oils in weak spirit. The following formulas for Aq. Menth. Pip. Conc. (1 in 40) are typical:—

I

Ol. menth. pip.	♏c.
Mag. carb. lev.	ʒij.
Spt. rectificat.	℥iij.
Aq.	℥j.

Dissolve the oil of peppermint in 2 oz. of rectified spirit, and pour into a mortar containing the mixed magnesia and water; transfer to a bottle, wash out the mortar with the rest of the spirit, add it to the bottle, shake occasionally for several hours, and filter.

II

Ol. menth. pip.	℥ss.
Alcohol.	ʒj.
Spt. rectificat.	ʒiv.
Aq.	℥iv.

Dissolve the oil in the alcohol, add the spirit and a drachm of kieselguhr, shake well, add the water, set aside for three days, shaking occasionally; filter, and make up to 8 oz. with proof spirit.

The first of these on dilution gives a clear water approximating to the pharmacopœial strength, and the second gives a cloudy water. Commercial concentrated waters are rarely so

strong as are provided for by these formulas. The following directions may be relied upon :—

Aqua Anethi Conc.

Ol. anethi . . .	♏c.
Aq. fervid. . . .	℥vj.
Spt. rectificat. ad . .	℥xviij.

Dissolve the oil in 10 oz. of the spirit, and add the hot water. Shake well and set aside for a day or two. Decant, and filter through 2 dr. of kaolin ; then make up the filtrate with spirit to 18 oz.

Aqua Menthæ Pip. Conc.

Ol. menthæ pip. . .	℥ss.
Aq. fervid. . . .	℥viij.
Spt. rectificat. ad . .	℥xx.

Dissolve the oil in 10 oz. of the spirit, add the water, and proceed as in making aq. anethi conc., adding, after filtration, sufficient rectified spirit to bring up the volume to 1 pint.

In the same way as aq. anethi conc., the corresponding preparations of anise, cloves, caraway, cinnamon, and fennel may be made. Cassia, pimento, rose, and spearmint should be made like aq. menth. pip. conc. In making aq. rosæ conc. omit a drachm of the otto and replace it with ol. ros. geran. ℥ss., which rounds off the aroma better. The addition of 5 drops of oil of cloves to each drachm of otto of rose used produces an aroma closely resembling that of the water distilled from rose-petals. Aquæ Concentratæ, B.P.C., are similar —viz., oil, alcohol, and water—thus : *anethi*, oil 12·5, alcohol 70 ; *anisi*, oil 5, alcohol (90 p.c.) 70 ; *camphoræ*, camphor 4, alcohol 60 ; *carui*, oil 10, alcohol 70 ; *chloroformi*, chloroform 20, alcohol to 100 ; *cinnamomi*, oil 4·75, alcohol 80 ; *fœniculi*, oil 7·5, alcohol 80 ; *menthæ pip.*, oil 3·75, alcohol 80 ; *menthæ vir.*, oil 3·75, alcohol 80 ; *pimentæ*, oil 7·5, alcohol 80 ; with distilled water to 100 in each case except chloroform.

Aqua Camphoræ may be quickly prepared by adding spt. camph. ℥iij. to a 40-oz. bottleful of distilled water and shaking briskly.

Aqua Carminativa

(For Gripes in Children)

I

Potass. bicarb. . .	℥j.
Syrupi	℥ij.
Aquæ carui . . .	℥ij.
Aq. anethi ad . .	℥viij.

Dose : A teaspoonful to be mixed with two tablespoonfuls of warm water and sipped.

'Gripe Water,' being a registered trade mark, cannot be used except by the owners (Woodward)

II

Ol. anthemidis . .	♏iij.
Ol. carui . . .	♏iv.
Ol. coriandri . . .	♏iv.
Ol. limonis . . .	♏iij.
Ol. menth. pip. . .	♏v.
Spt. rectificat. . .	℥iss.
Glycerini . . .	℥ij.
Aq. fervid. ad . .	℥xvj.

Dissolve the oils in the spirit, and shake up with the glycerine and 12 oz. of warm water. Allow to stand

for a day, and filter through a wet filter sprinkled with fullers' earth; wash the filter with cold water to 16 oz.

P.F. 20

Sodii bicarb.	ʒj.
Spt. ammon. arom.	ɱxl.
Syr. anisi	ʒj.
Aquam destillat. ad	ʒiv.

Aqua Menthol., B.F.

Menthol	gr. viij.
Alcohol (90-per-cent.)	ʒij.
Distilled water	ʒxx.

Dissolve the menthol in the alcohol, add the solution to the water, shake well, and filter after twenty-four hours.

B.P.C. is menthol. gr. x., alcohol. ɱxv., aq. dest. ad ʒxx.

Aqua Opii

The distillate from a mixture of 1 part of opium with 5 parts of water.

Aquæ Phagedænicæ

Lotiones hydrarg. flav. et nig., B.P.

Aqua Picis, vel Eau de Goudron

Tar	ʒv.
Powdered pumice	ʒxv.

Mix and shake for five minutes with

Water	Oiiss.

Filter.

B.P.C. is tar ʒij., water ʒxx.

BALSAMA—BALSAMS

Aniseed Balsam

Pulv. gum. acaciæ	ʒj.
Aquæ	ʒiv.
Oxymel. scillæ	ʒiv.
Vin. ipecac.	ʒiv.
Olei anisi	ɱxx.
Spt. vini rect.	ʒiij.
Theriacæ	ʒxxj.
Sol. sacch. ust.	ʒiss.
Aquam ad	Oij.

M.S.A.

Anodyne Balsam

In the seventeenth and eighteenth centuries anodyne or Guido's Balsam was made by distilling equal parts of Venice turpentine and tacamahaca, or balm of Gilead resin, and using the red oil which collected in the receiver. This gradually gave place to a soap-and-opium liniment—substantially the lin. opii of to-day—the following being a recipe followed early in the nineteenth century:—

Opii	ʒj.
Sapon. alb. hispan.	ʒiv.
Spt. vini rectif.	lb. ij.

Digest three days, filter, and add

Camphor.	ʒij.
Ol. rosmarin.	ʒss.

Agitate diligently.

Baume de Commandeur

(The Original Recipe)

Dry Peruvian balsam	ʒj.
Storax in tears	ʒij.
Benzoin	ʒiij.
Socotrine aloes	ʒss.
Myrrh	ʒss.
Olibanum	ʒss.
Angelica-root	ʒss.
Flowers of St. John's wort	ʒss.
Rectified spirit (by weight)	ʒxxxij.

'Let them stand in the sun during the dog days in a glass vessel closely stopt, and afterwards strain out the balsam through a linen cloth'—*i.e.*, macerate for eight days and filter. Tr. benzoin. co. is now given for this.

Cough Balsam, P.F. 6

(syn. *Anodyne Balsam*; *Balm-of-Gilead Balsam*)

Fl. ext. pinus strob.	10 dr.
Fl. ext. prunus serot.	10 dr.
Fl. ext. populus bals.	80 min.
Fl. ext. aralia racem.	80 min.
Fl. ext. sanguinaria can.	70 min.
Fl. ext. sassafras	40 min.
Morphine acetate	$3\frac{3}{4}$ gr.
Chloroform	80 min.
Glycerine,	
Distilled water of each a sufficiency to	20 fl. oz.

Baume de Floraventi

Bruised cinnamon, cloves, nutmeg, and ginger, of each	ʒj.
Myrrh, galbanum, and storax, of each	ʒij.
Laurel-berries	ʒiij.
Soft gum thus	ʒiv.
Rectified spirit	ʒxv.
Water	ʒxlii.

Macerate for a day and distil 16 oz.

Balsam of Horehound and Aniseed

Paregoric elixir	ʒij.
Tincture of senega	℥ss.
Spirit of chloroform	ʒss.

Mix, and in the mixture dissolve

Oil of peppermint	♏x.
Oil of anise	♏xx.

Then add

Liquid ext. of horehound	ʒss.
Liquid ext. of liquorice	ʒiij.

Shake well. Heat the following together :—

Treacle (weight)	ʒv.
Water	ʒij.

And add

Syrup of squill	ʒiij.

Gradually mix with the spirituous solution, and make up to ʒxx. with syrup of tolu and water.

Dose: For adults a teaspoonful three times a day.

Horehound Balsam

Horehound herb, elecampane, Jersey tea-root, spikenard-root, wild-cherry bark, comfrey-root, of each 6 drachms, bloodroot 3 drachms, rectified spirit, sugar, distilled water, of each a sufficiency to 20 fl. oz.

Kinderbalsam

Ol. caryoph., cinnam. et limonis aa.	2 c.c.
Ol. fœniculi, lavand., menth. pip., rosmarini, et salviæ aa.	1 c.c.
Spt. rectificat.	600 c.c.
Aquam destillat. ad	1,000 c.c.

Misce.

Liquorice-and-Aniseed Balsam

Vin. antimonialis,	
Vin. ipecacuanhæ aa.	ʒj.
Oxymel. scillæ	ʒvj.
Ext. glycyrrh. liq.	ʒj.
Chlorodyni	ʒiss.
Liq. ammon. acet. conc.	ʒj.
Ol. anisi	♏x.
Spt. camphoræ	ʒij.
Theriacæ	ʒxvj.
Aquam ad	ʒxxxij.

Dose: ʒss. to ʒj.

Riga Balsam

Chamomile and lavender flowers, wormwood, sweet marjoram, marjoram, spearmint, rosemary, sage, lovage, tansy, serpyllum, and summer savory herbs, calamus and angelica roots, and juniper-berries, of each ʒij., are macerated in 32 pints of rectified spirit overnight, and next day 20 pints of the liquor is distilled. This clear liquor is sold as it is, or it is coloured brown with aloes and benzoin. Hence tr. benzoin. co. is commonly sold as 'Riga balsam' for wounds, but the true balsam is an antispasmodic and carminative.

Balsamum Nervinum

Two preparations go by this name, an ointment and a tincture (Tr. Succini Aromat.).

Ointment

Beef marrow	℥iv.
Oil of mace	℥iv.

Melt together, and add a tincture of

Tolu balsam	ʒij.
Oil of cloves	ʒj.
Oil of rosemary	℥ss.
Camphor	ʒj.
Rectified spirit	℥ss.

Mix thoroughly.

Tincture

Oil of cloves	♏xv.
Oil of cinnamon	♏xv.
Oil of lavender	♏xv.
Essential oil of mace	♏xv.
Tincture of amber (1 in 6 of spirit of ether)	℥iv.

Mix.

Dose: 5 to 10 drops for hysteria, or to be used externally as an embrocation.

Balsamum Locatelli

(*Locatelli's or Luctuary Balsam*; *Bals. Italicum*)

(The Original Recipe)

Olive oil	℥xvj.
Strasburg turpentine	℥vj.
Yellow wax	℥vj.
Red sanderswood	ʒvj.

Melt the wax over a gentle fire with part of the oil, then add the rest of the oil and the turpentine; afterwards mix in the sanders, and keep them stirred together until the mixture is cold.

(A Modern Recipe)

Ol. olivæ	℥xvj.
Tereb. venet.	℥viij.
Rass. santal. rub.	ʒvj.

Prepare as above.

It is used for coughs with an equal quantity of conf. rosæ. The old Edinburgh formula contained Peruvian balsam, and was coloured with dragon's-blood, which gave it a better colour than the red sanderswood.

Pectoral Balsam

An old formula stated to give a product like Powell's balsam, which, however, is now free from scheduled poison.

Rad. ipecac. contus.	℥iss.
Flor. benzoin.	℥ss.
Opii crudi	℥ss.
Ol. anisi	ʒiij.
Spt. vini rectificat.	Oij.
Aquæ destill.	Oj.

Macerate for fourteen days, and add

Ext. glycyrrhizæ	ʒvj.
Potass. carbonat.	℥iv.

Dissolved in a pint of water, and

Tr. digitalis	℥vij.

Balsam. Sulphuris

(*Ol. Sulphuratum*)

Sublimed sulphur	ʒij.
Olive oil	Oj.

Heat the oil in a large iron vessel, and add the sulphur gradually until they are united.

Bals. Sulphur. Anisatum

One part of anise oil mixed with 5 parts of the last article.

Balsamum Traumaticum

(syn. *Vulnerary Balsam, Friar's Balsam, Turlington's Balsam, &c.*) is tr. benzoin. co., B.P. The original preparation was, however, Baume de Commandeur (*q.v.*), and the 'National Formulary' still gives

a formula closely resembling it, viz. :—

Benzoin	1½ troy oz.
Storax	½ ,,
Balsam of tolu	½ ,,
Balsam of Peru	120 grains
Aloes	60 ,,
Myrrh	60 ,,
Angelica-root	30 ,,
Rectified spirit	16 oz.

Macerate ten days with agitation, and filter.

The following recipe is a private one about 100 years old :—

Benzoin	½ lb.
Crude storax	½ lb.
(or liquid storax 1½ oz.)	
Balsam of Peru	2 oz.
Balsam of tolu	6 oz.
Olibanum	2 oz.
Saffron	2 dr.
Red sandalwood	2 oz.
Powdered alum	½ dr.
Rectified spirit	1 gal.

Macerate for a week and filter.

Baume de Vie

Dec. aloes co., B.P.

Balsamum Vitæ Aromaticum

Bals. nervinum (*q.v.*) is the simple modern form of an old preparation which was made as follows :—

Oils of lavender, nutmeg, cloves, rhodium, and serpyllum, of each	ʒss.
Oils of cinnamon, lemon, and bergamot, of each	℈ij.
Balsam of Peru	ʒj.
Spirit of lavender	ʒxv.

First dissolve the balsam in the spirit, then add the oils, and digest till the whole is dissolved.

Balsamum Vitæ (Dr. Rosa)

Hiera picra	ʒij, ʒij.
Bruised anise	ʒj.
Bruised juniper-berries	ʒj.
Rectified spirit	ʒxxv.
Distilled water	ʒx.

Macerate for a week, shaking daily, filter, and to the filtrate add simple syrup ʒss.

Bassorin

Under this name, which is properly applied to the insoluble part of tragacanth, there was introduced from the Continent a few years ago an ointment-basis made by mixing 1 part of powdered tragacanth with spirit to wet it, then adding 50 parts of glycerine (by weight) and heating until clear. Martindale quotes the following formula: Tragacanth 5, glycerine 2, rectified spirit 10, water to 100. In the spirit contained in a wide-mouthed bottle diffuse the tragacanth and add the water, then add quickly the glycerine, diluted with as much water, and shake well.

Boer Medicines

The Boers of South Africa are peculiar in their physic-likings, taking chiefly those things which have come down to them from their forefathers, and these must be put up by the retailer in certain styles. Particulars, with illustrations, will be found in the *C. & D.*, 1900, I., 432.

Bates' Alum-water

(*Liq. Aluminis Co., P.L.*)

Alum and sulphate of zinc, of each 1 oz., dissolved in 48 oz. of boiling water.

Boroglyceride

Glycerinum acidi borici, B.P., is a representation of this article, originally patented by Barff. The 'National Formulary' directs *boroglycerinum* to be made by heating together 62 parts of powdered boric acid and 92 parts (by weight) of glycerine until the weight is

reduced to 100 parts. The glycerine must be heated to 150° C. before the acid is added. When cold, cut into pieces and keep in a bottle.

The B.P.C. directs 32 of boric acid to be heated at 150° in 64 of glycerine until reduced to 85. When cool add 15 more of boric acid and mix.

Borosalicylate

A mixture of two molecular proportions (678) of sodium salicylate and four molecular proportions (248) of boric acid rubbed together, dried, and powdered. With this is made

Borosalicyl Cream

Borosalicylate . . .	ʒv.
Arnica glycerine . .	℥j.
Lanoline	ʒivss.
Vaseline	ʒvss.

Mix thoroughly and perfume.

Arnica glycerine is made by macerating 1 oz. of arnica-flowers in 8 oz. of glycerine for eight days and straining.

Excellent for chilblains.

Bromidia Imitations

Each fluid drachm of genuine bromidia is stated to contain 15 gr. each of chloral hydrate and potassium bromide, and ⅛ gr. each of extracts of cannabis and henbane.

I. *Liquor Bromo-chloral Co.*, Br.P.C. (*Liquor Bromidi Co.*, B.P.C.)

Chloral hydrate . .	1,600 grs.
Tinct. of Indian hemp	400 mins.
Tinct. of orangepeel .	400 ,,
Henbane-juice . .	1,600 ,,
Syrup . . .	3¼ oz.
Liq. extract of liquorice	½ ,,

Dissolve. Add

Potass. bromide . .	1,600 grs.
Distilled water . .	7 oz.

Filter, and make up the filtrate to 20 oz. with distilled water.

Dose: ʒss. to ʒij.

The B.1.C., 1907, had substantially the same formula, but now it is *Liq. Bromidi Co.*, and contains chloral hydrat. 27·5, potas. brom. 27·5, ext. cannab. ind. 0·23, ext. hyos. 0·23, tr. aurant. 12·5, glycerin. 18·75, aq. dest. ad 100. This is a modification of the Bournemouth formula (p. 671).

The 'Canadian Formulary' has the Br.P.C. recipe, the quantities of chloral and bromide being 3½ oz., tinctures 6 dr., and henbane-juice 3 oz.; otherwise the same.

II (Baily's)

Hydrate of chloral .	80 grains
Bromide of potassium	120 grains
Henbane-juice .	80 minims
Tincture of Indian hemp . . .	80 minims
Glycerine . .	1 ounce
Cinnamon-water to .	8 ounces

Dose: 1 ounce.

III (Edinburgh Infirmary)

Bromide of potassium .	ʒvj.
Chloral hydrate . .	ʒvj.
Tincture of hyoscyamus .	ʒiij.
Tincture of cannabis indica	ʒiss.
Lemon syrup . . .	℥iij.
Distilled water to . .	℥vj.

Dissolve and mix. Shake up with kaolin, and filter.

Dose: ʒij.

IV (N.F.)

Mist. Chloral. et Pot. Brom. Co., or Chloral and Bromide Compound'

Hydrat. chloral., pot. brom. aa. T. ℥vj., ext. can. ind., ext. hyoscyami aa. ʒss., aq. ad ℥xxxij. Rub the extracts with pumice ʒv. Dissolve other solids in water ℥xx. at 90° C. and gradually add to pumice mixture. Set aside for twenty-four

hours. Filter, and wash filter with water to ℥xxxij.

Dose: 5j.

Mr. J. F. Brown said in the *C. & D.*, 1897, I., 31, that 'The variations upon the original formula seem to be quite unnecessary. Premising knowledge of the solvent powers of chloral hydrate over resinous substances, no competent chemist would find any difficulty in compounding the preparation from the data furnished by its makers. Rubbed down in a porcelain dish with the required quantity of solution of chloral hydrate (1 in 1) the extract of cannabis readily dissolves; then add the extract of henbane and rub it down; then the powdered bromide, with a little more than twice its weight of water; dissolve and make up to the exact volume.'

Brust Thee

(*Breast Tea; Species Pectorales*)

German Pharmacopœia

Rad. althææ	℥xij.
Rad. glycyrrhiz.	℥ivss.
Rad. iridis flor.	℥iss.
Fol. farfaræ	℥vj.
Flor. verbasci	℥iij.
Sem. anisi	℥iij.

Austrian Pharmacopœia

Fol. althææ	℥XL.
Rad. glycyrrhizæ	℥xxx.
Rad. althææ	℥x.
Hordei perlati	℥x.
Flor. verbasci	℥j.
Flor. althææ	℥j.
Flor. rhœados	℥j.
Anisi stellatæ	℥j.

Cut or bruise the ingredients, as the case may be, mix well, and put up in 2-oz. packets for making a winebottleful of infusion, to be used as a cough-mixture.

Buginaria

The following are made with cocoa-butter or gelatin basis.

Nasal

*Acid. carbolic.	gr. ss.
*Bismuth. subnitrat.	gr. v.
Cocainæ hydrochlor.	gr. $\frac{1}{6}$
*Cupri sulphat.	gr. $\frac{1}{16}$
*Iodoformi	gr. ss.
*Morphinæ acet.	gr. $\frac{1}{10}$
*Ol. pini sylvest.	mss.
*Plumbi acet.	gr. ss.
*Thymol.	gr. $\frac{1}{10}$
*Zinci sulphat.	gr. $\frac{1}{10}$

* These are Throat Hospital preparations, and are to be made with 40 grains of gelatin basis.

Urethral

Acid. gallic.	gr. j.
Acid. tannic.	gr. j.
Argenti nitrat.	gr. $\frac{1}{4}$ to gr. j.
Bismuthi oxidi	gr. v. to gr. x
Bism. oxychlor.	gr. v. to gr. x.
Bism. subnit.	gr. v. to gr. x.
Cocainæ (& salts)	gr. ss.
Cupri sulphat.	gr. j.
Ext. bellad. alc.	gr. $\frac{1}{4}$ to gr. j.
Ext. opii	gr. ij.
Ferri perchloridi	gr. ss. to gr. j.
Iodoform.	gr. v.
,, c. ol. eucalypt. (Watson Cheyne)	mv. to mx.
Morph. hydrochlor.	gr. j.
Ol. eucalypti	mv. to mx.
Plumbi acet.	gr. ss. to gr. j.
Salol.	gr. x.
Thallin. sulph.	gr. iij. to gr. v.
Zinci chlorid.	gr. $\frac{1}{4}$ to gr. $\frac{1}{2}$
Zinci sulph. exsic.	gr. ss. to gr. j.
Zinci sulphocarbol.	gr. ss. to gr. j.

Calamina Artifacta

(*W. Lyon*)

Sulphate of zinc	861 parts
Strong solution of perchloride of iron	15 fl. parts
Carbonate of sodium	890 parts

Dissolve the sulphate in water and add the iron solution. Dissolve

the carbonate in water, mix the solutions, shake well, and collect the precipitate on a calico filter. Wash until free from sulphate, drain well, and heat in a crucible until a portion of the powder ceases to effervesce on addition of an acid. Cool, and grind to an impalpable powder.

Calamina Factitia, B.P.C., is the same process, but sulphate 56, carbonate 58, iron solution 1, and distilled water 320.

Camphoid

(*Martindale*)

Mix equal parts by weight of camphor and absolute alcohol, and when solution is complete dissolve in each 40 fluid parts of the solution 1 part of pyroxylin.

Used as a substitute for collodion to form a vehicle for such drugs as iodoform, salicylic acid, resorcin, chrysarobin, &c. 'The preparation dries in a few minutes, leaving an opaque film, which is not easily washed off.'

Camphorodyne, or Camphoradine

An Indian cholera-remedy which was mentioned in the draft of the Colonial and Indian Addendum to the British Pharmacopœia, 1898. This formula was supplied by the late Lieut.-Col. St. Clare Carruthers, I.M.S.

A

Camphoræ flor.	ʒj.
Chloroformi	ʒij.
Tr. cannab. indic.	ʒij.
Ol. menthæ pip.	ʒss.
Tr. capsici	ʒiss.

M.S.A.

B

Morphinæ hydrochlor.	gr. xxxij.
Acid. hydrochlor. dil.	ʒss.
Aq. destillat. ad	ʒj.

Solve cum calore.

C

Acid. hydrocyanic. dil.	ʒj.
Mucilag. acaciæ	ʒiss.
Theriacæ	ʒv.
Syrupi	q.s.

Put the treacle into a clean bottle, add the mucilage and acid, and shake well; add B and again shake, then A, and after this is incorporated make up the whole to 16 oz. with syrup.

Dose: ♏xv. to ♏xxx.

Capsulæ Apiol. et Ergotini, C.F.

Apiol ♏v. and ergotin gr. ij. in each capsule.

Capsulæ Colchicinæ et Methyl. Salicylatis, C.F.

Colchicin. salicylat.	gr. j.
Methyl. salicylat.	ʒiiss. ♏L.

Dissolve and fill into 250 capsules.

One for a dose. Each contains 5 minims of methyl salicylate and $\frac{1}{250}$ gr. of colchicine salicylate.

Strengthening Capsules or Blood-formers

Pilulæ ferri, B.P., gr. viij. To be coloured red and made into a capsule.

Blood-purifier Perles

Sulphur	gr. iv.
Cream of tartar	gr. ij.
Sarsaparilla	gr. iv.

Make one perle.

Headache-perles

Each contains phenacetin 4 gr. and caffeine 1 gr.

Rheumatism-perles

Oil of wintergreen	♏ij.
Salol	gr. iij.
Guaiacum resin	gr. vj.

Make a perle.

Dose: Two perles thrice daily.

CARBASI ANTISEPTICI—ANTISEPTIC GAUZES

The following formulas for making antiseptic gauzes are typical of the methods followed, with certain modifications, by manufacturers. Obviously the retailer should not undertake to make such articles except in cases of emergency, as when volatile and inflammable solvents are used the danger of working in ordinary premises is considerable. The iodoform and salicylic-acid formulas are, on the whole, the best for extemporaneous preparation of the gauzes, and are well suited for salol, thymol, aristol, resorcin, and other antiseptics soluble in acetone, chloroform, ether, or spirit. When the antiseptic is volatile it should be combined with resin and oil, as in the salicylic-acid gauze.

The best gauze to use is one having about thirty threads to the linear inch, and weighing 10 dr. per square yard. An easy way to saturate, say, 2 yards of gauze is to hang the fabric over a string and spray the required volume of antiseptic solution uniformly over it at each side, turning once or twice until the whole of the solution has been used. Or the gauze may be folded and put into a deep photographic developing-dish, containing the solution, and turned to absorb the antiseptic equally, then taken out, unfolded, shaken, and dried.

Alembroth, 1 per cent.

Sal alembroth	ʒj.
Methyl blue	q.s.
Glycerine	ʒij.
Distilled water	℥xij.

Dissolve, and in the solution steep 10 oz. of gauze, press out to weigh 21 oz., and dry. [B.P.C., similar without glycerine.]

Benzoic Acid, 4 per cent.

Benzoic acid	ʒv.
Castor oil	ʒij.
Rectified spirit	℥xiij.

Dissolve, and saturate 10 oz. of gauze in the solution. Press to a weight of 20 oz., and dry.

Boric Acid, 10 per cent.

Boric acid	ʒix.
Boiling water	℥xiij.

Dissolve, and to the solution (tinted with aniline red) add

Cotton gauze	℥x.

Allow the solution to be equally soaked in, and when that is done press until the gauze weighs 15 oz., then dry. [B.P.C., 40 per cent. of acid.]

Carbolic Acid

Lister directed it to be made by medicating gauze with half its weight [B.P.C., own weight] of a mixture of carbolic acid 1 part, and resin and hard paraffin of each 4 parts.

This gives rather an unpliable product, but the mixture is improved by the addition of 2 parts of vaseline oil.

Iodoform

Iodoform . . .	℥j.
Methylated ether . .	℥x.
Rectified spirit . .	℥viij.

Dissolve the iodoform in the ether and spirit, add glycerine ℥ij., mix, and saturate 10 oz. of gauze in the mixture, which dry.

This gives a 10-per-cent. gauze; for a 20-per-cent. use iodoform ℥ij., ether ℥xx., castor oil ℥j., and no spirit. B.P.C. does not give spirit.

Salicylic Acid

Petroleum ether (s.g. 0·690–0·700) . . .	Oiiss.
Methylated ether . .	℥v.
Vaseline oil . . .	℥ss.
Elemi	℥iss.
Salicylic acid . . .	℥ij.

Make a solution. This is sufficient to saturate its own weight of gauze to give approximately a 5-per-cent. gauze.

Eucalyptus

(*Lister's 4-per-cent.*)

Eucalyptus oil . .	℥iss.
Dammar resin . .	℥iij.
Paraffin	℥ivss.

Melt the solids by heating at a temperature of 50° to 60° C. for two hours, add the eucalyptus oil, then saturate 12½ oz. of gauze with the mixture by passing it through warm plates or cylinders smeared with the composition.

Lord Lister's formula for double cyanide gauze is given in the Supplementary Chapter.

Carbolised Resin

(Dental)

Resinæ, mastic., et sandarac . . .	aa.	℥j.
Camphor. et phenol.	aa.	℥ij.
Chloroformi . . .		℥j.
Alcohol. (90-per-cent.) ad		℥iv.

B.P.C. is phenol and mastic of each ℥j., resin ℥ij., chloroform ℥j.

CERATA—CERATES

Ceratum Citrinum

(*Yellow Cerate, P.L.*)

Resin ointment . .	℥vj.
Yellow wax . . .	℥j.

Melt together.

'Citrine ointment' nowadays is ung. hydrarg. nit. mitius; but how often do people really mean the above when they ask for citrine ointment?

Ceratum Cretæ Compositum

Emp. plumbi . . .	℥vij.
Ol. olivæ . . .	℥iv.
Cretæ preparatæ . .	℥iv.
Aceti destillati . .	℥iv.
Liq. plumbi subacet. .	℥ss.

Melt the oil and the plaster together. Rub down the chalk with the vinegar and liquor, previously mixed, and add the melted basis with diligent stirring, maintaining the heat to ensure perfect mixing.

Ceratum Epuloticum

(*Epulotic or Turner's Cerate*)

Calaminæ . . .	℥vj.
Ceræ flavæ . . .	℥vj.
Ol. olivæ . . .	℥xvj.

Ft. ung.

Ceratum Calaminæ, B.P.C., gives calamine 20, wax 20, and olive oil 60.

Ceratum Galeni.

(*See* p. 44)

Indian Cerate.—The evolution of this popular ointment will be apparent when the formula for ceratum cretæ co. is compared with the following four formulas. The chalk cerate is from the old Manchester Pharmacopœia, and is probably an improvement upon the original A, while B is a simpler form of cerat. cretæ co.; and since 'cutting' came in, we are getting down to simpler forms still, as notice C and D, which are articles to sell in penny boxes. Cerate A retails at 1*d.* a drachm, or 4*d.* per oz., without recommendation. With label to the effect that it is 'the celebrated Indian cerate for healing burns, wounds, cuts, slight skin-affections, &c.,' it is put up in 3-oz. pots, stamped, to retail at 1*s.* 1½*d.*

A. The following is claimed to be the original recipe:—

First Stage.—Rub up in a large warmed mortar ʒij. of Peruvian balsam with ℥ij. of olive oil.

Second Stage.—Melt 1 lb. of white wax in 78 oz. of olive oil, by the aid of heat, and mix with the Peruvian balsam and oil.

Third Stage.—Make 15 oz. of levigated carbonate of lead into a thin paste with distilled water, and mix well with the above ointment while hot, stirring constantly till nearly cold.

B. In Lancashire and the Potteries an ointment made as follows is largely sold. It was formerly known as *Kirkland's Cerate*:—

White wax . . .	℥viij.
Olive oil	℥xl.

Melt and dissolve in the mixture

Camphor . . .	ʒj.

Then gradually add to the following, previously made into a paste with water:—

Sugar of lead . . .	ʒij.
Precipitated chalk . .	℥viij.

C. A third cerate, 'for burns, scalds, chapped hands, sore eyes, &c.,' is sold in the Ashton-under-Lyne district —

Zinci oxidi . . .	ʒij.
Ceræ japonicæ . .	℥iss.
Adipis	℥iv.

M.S.A.

D. Cocoanut oil, hardened with Japan wax, is also sold under this name.

Cerate, Marshall's
(Dr. Paris)

Palm oil	℥v.
Calomel . . .	ʒj.
Lead acetate . . .	℥ss.
Citrine ointment .	℥ij.

Mix.

Cerate, Dr. Pearson's
(*Ceratum Plumbi*, B.P.C.)

Emp. plumbi . . .	℥iv.
Ceræ flavæ . . .	ʒj.
Ol. amygdalæ . . .	℥iij.

Melt together and stir until cool.

Cerate, Pott's

Pulv. litharg. . . .	℥xvj.
Sapon. castil. . . .	℥ij.
Aceti destillati . .	℥xxxij.

Dissolve the soap in the vinegar,

add the litharge, and evaporate to dryness; then mix in the following, previously melted:—

Ceræ flavæ	℥x.
Ol. olivæ	℥xvj.

Make a smooth cerate.

Ceratum Saponis, U.S. 1870

Soap plaster	℥ij.
Yellow wax	℥iiss.
Olive oil (by weight)	℥iv.

Melt the plaster and wax together, add the oil, and, after continuing the heat for a few seconds, stir the mixture until cool.

Charta Nitrata [B.P.C.]
(*Nitrated or Nitre Paper*)

Make a solution of potassium nitrate of from 30 gr. to 1 dr. to each ounce of water [B.P.C., 20 per cent.], and through the solution contained in a flat plate draw pieces of white blotting-paper, which dry.

Charta Sinapis
(Gerrard's Modification.)

Black and white mustard seed, in No. 60 powder, deprived of fixed oil	1 part
Benzol solution of india-rubber (1 in 40)	4 parts

Mix to a smooth mass, and spread the same over one side of a suitable paper by means of a plaster-spreading machine, or by passing the paper over the mass contained in a shallow vessel. Expose to warm air for a short time to dry. Preserve the dry paper in well-closed boxes.

French Antiasthmatic Paper

Potass. nitrat.	℥vj.
Pulv. bellad. fol.	℥ss.
Pulv. digital. fol.	℥ss.
Pulv. stramon. fol.	℥ss.
Pulv. lobel. inflat.	℥ss.
Pulv. phelland.	℥ss.
Pulv. myrrhæ	℥j.
Pulv. olibani	℥j.

Mix these powders and incorporate with 12 oz. of unsized paper soaked in water. When thoroughly pulped, spread out into thin layers, calender, and dry.

German Antiasthmatic Paper

Potassii nitrat.	℥ij.
Ext. stramon.	ʒx.
Sacch. alb.	℥iiss.
Aq. bullient.	℥xiiss.

Dissolve the solids in the water, strain the solution, and saturate white blotting-paper with it. Dry the paper, and cut up into suitable pieces.

Papier Fayard

Gout-paper

The following is the process given in the expired patent:—The paper is rendered waterproof in the following manner:—Linseed oil, 500; garlic, chopped fine, 30; turpentine, 500; acetate of lead, 50; yellow ochre, 30; red-lead, 15. The garlic is boiled with the oil, and stirred continuously. It is then strained, and the other substances added. The resulting preparation is next spread on tissue-paper, either with a sponge or a broad camel-hair pencil, such as is used by gilders, and allowed to dry at the ordinary temperature or in a heated room for about a fortnight. When the paper is dry spread the following mixture on it:—Olive oil, 200 parts; yellow wax, 6 parts; and red-lead, 100 parts.

Another process is:—Make a tincture with euphorbium ʒiij., cantharides ʒvj. in rectified spirit ℥iv. In the filtered tincture dissolve Venice turpentine ʒiij., and dip fine paper in the mixture.

Chillie Paste.—Messrs. Hirst, Brooke & Hirst are the owners of the original formula for Smedley's Chillie Paste, a favourite 'rub' for rheumatism, &c. Another preparation has long been sold in the Midlands as a substitute under the name Chillie Paste, and the British Pharmacopœia, 1898, introduced an imitation with the title *Unguentum capsici* (bruised capsicum-fruit ʒij., spermaceti ʒj., olive oil ʒj.). Previously the British Pharmaceutical Conference published a formula (*see* below) which gives a product too strong for tender skins, hence, no doubt, the B.P.'s adoption of a modification of the first of the subjoined formulas, which is the one generally followed :—

A

Pulv. capsici	ʒviij.
Ol. olivæ	ʒxxxij.
Cetacei	ʒvj.

Macerate the capsicum in the oil for three days, strain, press, filter, and melt the spermaceti in the oil by a gentle heat. Stir constantly until cold.

B

The same as A, but *boil* the capsicum in the oil for seventy-two hours, and when the ointment is finished perfume with lavender oil.

C. *Ung. Oleo-res. Capsici*, Br. P.C.

Oleo-resin of capsicum, U.S.P. (capsicin)	ʒj.
Yellow wax	ʒss.
Benzoated lard	ʒiv.

Melt the wax and lard, add the oleo-resin, and stir until cold.

B.P.C. gives oleo-resin 18, wax 9, and lard 73.

Chloral Camphoratum.—Br.P.C., B.P.C., C.F., and N.F. direct equal parts of chloral hydrate and camphor to be rubbed together until liquid. *Chloral Camphoratum cum Cocaina*, B.P.C., contains 1 of cocaine and 9 of the mixture.

CHLORODYNE

This celebrated medicinal speciality was invented by Dr. Collis Browne in 1846, and after a thorough trial of it in India the inventor came home in 1853, and by Mr. J. T. Davenport's assistance the compound was popularised. Imitations of it were quickly put forward, the first being communicated by Mr. A. P. Towle to the second number of *The Chemist and Druggist* (October 15, 1859) as that used by Dr. Ogden in St. Mary's Hospital, London. It appears to

have become the basis of most of the formulas which have since seen the light. It was as follows :—

Chloroform.	ʒvj.
Tr. capsic.	ʒss.
Morph. hydroch. . . .	gr. viij.
Acid. hydrocyan. (Sch.) . .	gr. xvj.
Ol. menth. pip.	gr. ij.
Acid. perchloric.	gr. xx.
Theriacæ	ʒj.

M.

Add the chloroform last, well rubbing and shaking it; should keep mixed.

Dr. Ogden himself sent another (*see* p. 571) to the *C. & D.* of January 14, 1860, and, together, these drew criticism from all ends of the earth regarding the bad pharmacy of the recipes, but brought out one of the few analyses of chlorodyne which have been published. Mr. Charles Bullock, at one time President of the Philadelphia College of Pharmacy, was the analyst. Briefly described, the result of his analysis was—

The clear alcoholic solution of chlorodyne gave indications of the presence of resinous bodies in minute quantity, absence of hydrocyanic acid, a pungent or peppery substance, and a green stuff like chlorophyll. The insoluble portion appeared to be glucose, but Mr. Bullock isolated alkaloids from it, amongst them morphia and codeia; and, although the tests are not altogether above suspicion, he certainly seems to have obtained an alkaloidal residue consisting of more than morphia.

Mr. Bullock came to the conclusion that 'about two-thirds of chlorodyne appears to be treacle; the remaining one-third chloroform, a small amount of water in which the alkaloids are previously dissolved, a little peppermint and capsicum, and perhaps some cannabis indica. The following recipe (he continues) will furnish a preparation having the pharmaceutical properties of chlorodyne, according to Dr. Ogden :—

Muriate of morphia	gr. viij.
Water	fl. ʒss.
Perchloric acid (25° B.) . . .	gtt. xx.
Chloroform	fl. ʒiss.
Tinct. of Indian hemp . . .	fl. ʒj.
Hydrocyanic acid (U.S.P.) . .	gtt. xij.
Molasses	fl. ʒss.
Oil of peppermint	gtt. ij.
Oleo-resin of capsicum . . .	gtt. j.

To the morphia and water in a small flask add the perchloric acid, and heat until a clear solution is obtained. Then add the molasses, previously warmed to render it fluid. Heat the mixture and agitate well. When cold add the other ingredients and mix thoroughly.'

Mr. Bullock had not the courage to give effect to his analytical indications by including in his formula other opium alkaloids besides morphine; the 'National Formulary' at one time used tr. opii deodorat. in place of morphine, but now uses morphine sulphate and no opium. Hager puts both in. Since the 'fifties an enormous number of guesses have been made respecting the composition of chlorodyne, and we collate from fifteen of these the quantitative statement of ingredients to make 8 oz. of product, adding B.P. '98 (20 oz.) and Chlorodynum, B.P.C. (100 parts).

It will be seen from the table that it is highly probable that imitations of chlorodyne are as divergent from each other as from the original. Formulators are agreed upon one point, however—viz., to include from eight to twelve articles in the compound; but the list contains about thirty, therefore at least a score should not be there. Then the proportions of active ingredients are dangerously erratic: chloroform varies from 1 dr. to 4½ oz. in the 8 oz., morphine hydrochloride from 2 to 64 gr. in the 8 oz., and hydrocyanic acid from 20 to 480 minims per 8 oz. So far as the last-mentioned ingredient is concerned, it may be stated that Dr. Collis Browne's chlorodyne does not contain it, and its morphine content is, according to Dr. B. H. Paul, 'practically 2 gr. of actual morphine in 1 fl. oz.,' or about half the amount in the British Pharmacopœia, 1898, preparation.

Various names have been given to chlorodyne substitutes. The 1885 B.P. preparation was called 'tinctura chloroformi et morphinæ,' and resembled Squire's 'liquor chloroformi compositus.' The 1898 edition added 'composita' to the name and altered the composition, as a glance at the next page will show. Martindale, who was unable to detect ether in chlorodyne, called his substitute 'liquor chloromorphiæ'; and the 'National Formulary' has it 'mistura chloroformi et cannabis indicæ composita,' or 'chloroform anodyne.' In the tabular statement on the next page dilute hydrocyanic acid is to be used, except in three cases marked *, where Scheele's is intended.

Ingredients in the proportions required to make 8 oz., except B.P. '98 and B.P.C.	B.P., 1885	B.P., 1898	Squire	Martindale	Ogden, No. 2	Smith	Stockman	Dowse	Groves	Private	Private	Private	Nat. Form.	Hager	American	American	B.P.C.
Chloroform.	℥j.	℥iss.	℥j.	ʒ 13	℥ivss.	℥j.	℥iiiss.	ʒj.	℥ij.	℥j.	℥j.	ʒiij.	℥iv.	ʒj.	ʒviss.	—	6
Æther.	ʒij.	—	ʒij.	—	—	℥ss.	—	ʒj.	ʒvj.	ʒiij.	ʒiiss.	ʒij.	℥j.	♏ 40	—	—	—
Spt. rectificat.	℥j.	℥x.	℥j.	ʒ 13	—	—	ʒxiv.	—	—	—	ʒvj.	—	℥ij.	℥iij.	ʒ ij.	—	to 100
Tr. opii	—	—	—	—	—	—	—	—	—	—	—	—	—	ʒij.	—	—	—
Morphin. hydrochlor.	gr. 8	gr. 87½	gr. 2	gr. 32	gr. 48	gr. 40	gr. 56	gr. 4	gr 64	gr. 32	gr. 32	acet. gr. 12	—	gr. 3	—	acet. gr. 32	0·5 —
Morphin. sulph.	—	—	—	—	—	—	—	—	—	—	—	—	gr. 36	—	gr. 24	—	—
Acid. acetic. dil.	—	—	—	—	—	—	—	—	—	—	—	♏ 12	—	—	—	℥ss.	—
Acid. hydrocyanic. dil. [* Scheele's]	℥ss.	℥j.	℥ss.	♏ 128	♏ 72*	℥j.	♏ 84*	ʒss.	ʒvj.	ʒij.*	♏ 20	♏ 48	—	—	—	ʒiij.	—
Ol. menthæ pip.	♏4	♏ 14	♏ 4	♏ 6	♏ 12	♏ 16	—	♏ 4	♏ 32	♏ 16	♏ 12	♏ 15	♏ 30	♏ 8	♏ 12	ʒiij.	Spt. 1
Ext. glycyrrhiz. liq.	℥j.	—	ʒv.	ʒx.	—	—	—	—	—	—	ʒv.	—	—	ʒss.	ʒiij.	—	12
Theriaca		—	℥j.	℥iij.	ʒvj.	q.s.	ʒvij.	q.s.	—	℥iv.	℥iiiss.	℥iss.	—	—	—	℥iss.	25
Syrup.	q.s.	—	℥ivss.	—	—	—	—	—	℥iv.	—	—	—	—	—	—	—	—
Atropin. sulphas	—	—	—	gr. ⅘	—	—	—	—	—	—	—	—	—	—	—	—	—
Pulv. tragacanth.	—	—	—	gr. 16	—	—	—	—	—	—	gr. 10	—	—	—	—	—	—
Glycerinum	—	℥v.	—	—	—	—	—	—	—	—	ʒiij.	—	℥iv.	—	q.s.	—	22
Aqua destillata	—	—	—	q.s.	—	—	—	—	ʒij.	℥ss.	℥j.	q.s.	℥ij.	—	—	—	—
Tr. capsici	—	℥ss.	—	—	ʒiij.	℥iss.	ʒiiiss.	—	—	—	ʒj.	ʒj.	℥j.	—	—	—	1.5
Tr. cannabis indicæ	—	℥ij.	—	—	ʒvj.	—	ʒvij.	—	Ex. ʒj.	Ex. gr. 12	ʒij.	—	℥vj.	—	Fl. ex. ʒiij.	Ex. gr. 64	3 —
Acid. perchloric.	—	—	—	—	ʒij.	—	♏ 70	—	ʒij.	—	—	—	—	—	—	—	— —
Æther. chloric.	—	—	—	—	ʒvj.	—	—	—	—	—	—	—	—	—	—	℥ij.	—
Mucilag. acaciæ	—	—	—	—	—	℥ij.	—	ʒiiss.	—	—	—	—	—	—	—	—	12
Ext. belladonnæ	—	—	—	—	—	—	—	℈j.	—	—	—	—	—	—	♏50fl.	—	—
Capsicin	—	—	—	—	—	—	—	gr ¾	—	—	—	—	—	—	—	ʒiij.	—
Capsicum	—	—	—	—	—	—	—	—	gr. 8	gr. 4	—	—	—	—	—	—	—
Sacch. ust.	—	—	—	—	—	—	—	♏ 8	—	—	—	—	—	—	—	—	—
Syr. glycyrrhizæ	—	—	—	—	—	—	—	—	—	—	—	—	—	℥iv.	—	—	—
Aq. amygd. amar. conc.	—	—	—	—	—	—	—	—	—	—	—	—	—	ʒv.	—	—	—
Tr. zingiberis	—	—	—	—	—	—	—	—	—	—	—	—	—	—	℥ij.	—	—

The best manner of making these compounds is exhibited in the following formula, which works nicely :—

		In ♏x.
Chloroformi	ʒiss.	♏ı¼
Ess. menthæ piperit. (1–4)	♏ 96	♏ij
Tr. capsici	♏ 144	♏iij
Ext. opii liquid.	♏ 144	♏iij
Tr. cannab. ind.	♏ 192	♏iv
Spt. rectificat. ad	ʒiv.	

Mix to form a solution, which add in small portions at a time to the following mixture :—

		In ♏x
Morphinæ acetat.	gr. xxiv.	gr. 1/24
Pulv. tragacanth.	gr. xvj.	
Theriacæ	ʒiij.	
Ext. glycyrrhiz. liq.	ʒiss.	
Aq. ad	ʒviij.	

Put the tragacanth in a dry bottle with a few drops of S.V.R., add, all at once, the water (in which previously dissolve the morphine acetate). Shake thoroughly well ; then add the treacle and extract of liquorice, and shake. Now add the first solution, a little at a time, shaking well after each addition. The finished product should measure 12 oz.

Red Chlorodyne

Chloroform	ʒij.
Ether	ʒss.
Tincture of Indian hemp	ʒj.
Tincture of capsicum	ʒj.
Muriate of morphine	℈j.
Oil of peppermint	♏xvj.
Dilute hydrocyanic acid	ʒj.
Glycerine	ʒiij.
Water	ʒj.
Cochineal colouring	a sufficiency
Rectified spirit	ʒxvj.

Mix in the usual way.

Transparent Chlorodyne

Morph. hydrochlor.	gr. xij.
Spt. rectif.	ʒiss.
Tr. cannab. ind.	ʒij.
Ol. menth. pip.	♏vj.
Tr. capsici	ʒj.
Chloroformi	ʒss.
Ac. hydrocyan. dil.	ʒj.
Glycerinum ad	ʒvj.

Dissolve the morphine in the spirit, add the other ingredients in their order, and colour with sacch. ust. q.s., as on keeping it becomes blue. If desired to be colourless omit the tr. cannab. ind.

C. Chlorodyne

Spt. menth. pip.	ʒij.
Spt. camphor.	ʒij.
Spt. chloroformi	ʒij.
Tr. capsici	ʒij.
Tr. zingib.	ʒij.
Tr. catechu	ʒvj.
Tr. digitalis	ʒj.
Acid. hydrocyan. dil.	ʒij.
Glycerini	ʒiij.
Spt. vini rect.	ʒij.

M.

Used in India in cholera cases (*see also* Camphorodyne). Dose : ♏xx. to ʒj. in water every fifteen minutes until vomiting and purging stop.

Chloroformum Aconiti, Br.P.C.

Aconite-root . . .	℥xx.
Strong solution of ammonia . . .	℥iss.
Distilled water . .	℥xx.

Macerate for four hours, dry, powder (No. 40), and after macerating with 20 oz. of chloroform for twenty-four hours percolate with chloroform until 30 oz. of percolate is obtained.

Chloroformum Belladonnæ, Br.P.C.

Prepared from belladonna-root in No. 60 powder in the same way as chlorof. aconiti.

The B.P.C. prescribes ext. bellad. liq. ℥x., mag. calc. pond. ℈iv., sodii sulph. exsic. ℥vj., chlorof. ad ℥xx.

In 1864 the late Mr. Peter Squire introduced these chloroforms, made 1 in 1 by simple percolation with chloroform. In consequence of an observation by Mr. T. B. Groves, the British Pharmaceutical Conference made the modifications noted above, but Squire's 'Companion' states that 'no more alkaloid is extracted,' and practically recommends the old 1-in-1 preparation, which is just as strong, and is less troublesome to make than the above. The B.P.C. directs the aconite preparation to be made with the root (No. 60 powder) 100, ammonia solution 25, in twenty-four hours percolating to 100 with absolute alcohol 1 and chloroform 7. Chloroform. Hyoscyami may be made similarly from henbane-root. Chloroformum Camphoratum, Br.P.C., B.P.C., and C.F., is a solution of camphor 2 oz. in chloroform 1 oz.

COLLODIA—COLLODIONS OR COLLOIDS

The basis of most of the preparations of this class is the collodion of the British Pharmacopœia, which is a solution of 1 part of pyroxylin in 36 parts of ether (s.g. 0·735) and 12 parts of rectified spirit by volume. Certain substitutes for pyroxylin prepared from cotton have been proposed, such as photoxylin, a nitro-cellulose made from wood pulp; but the initial purity of cotton fibre gives it superiority and convenience which make it eminently suitable for pharmaceutical purposes. The flexible or elastic collodion, containing 10 minims of castor oil and 20 gr. of Canada balsam in 10 oz. of collodion, is preferred in certain cases, as it does not crack so readily as the plain variety.

Acetone Collodion
(syn. *Liquid Court Plaster*)

Pyroxylin	ʒv.
Camphor	ʒj.
Pure acetone	ʒxiiss.

Dissolve the pyroxylin and camphor in a clean bottle with 10 oz. of acetone, and add sufficient acetone to make the product measure 12½ oz.

Collodium Acetonum, B.P.C., is pyroxylin 5, oil of cloves 2, amyl acetate 25, benzol 20, and acetone to 100.

Collodium Simplex B.P.C., is pyroxylin ʒv., acetone to ℥ xx.

Anodyne Colloid (Laskersteen's)

Hydride of amyl	ʒj.
Aconitine	gr. j.
Veratrine	gr. vj.
Collodion to	ʒij.

Martindale states that amyl hydride ʒss. and absolute alcohol ʒss. make a better preparation.

Collodium Anodynum, B.P.C., is aconitine 1, veratrine 68, acetone 300, acetone collodion to 1,000.

Arnica Collodion

Arnica in coarse powder	ʒiv.
Ether	ʒxij.
Rectified spirit	a sufficiency

Mix the ether with 4 oz. of spirit, moisten the arnica with the fluid, pack in a percolator, and after six hours percolate, continuing the percolation with rectified spirit until 16 oz. is obtained. In this dissolve 128 gr. of pyroxylin.

Collodium Belladonnæ, Br.P.C.
(syn. *Emplast. Belladon. Fluid.*
An imitation of the preparation introduced by Messrs. T. & H. Smith, of Edinburgh)

Alcoholic extract of belladonna-leaf, as much as contains	44 gr. alkaloid
Alcohol (90 p.c.)	ʒix.

Dissolve and add

Ether	ʒix.

Shake well, set aside for twelve hours, decant the clear liquid, and in it dissolve

Camphor	gr. 130
Pyroxylin	ʒss.

Make up to 20 oz. with a mixture of equal parts of ether and rectified spirit.

Merson's Improved

Fluid extract of belladonna	ʒx.
Purified ether (s.g. 0·720)	ʒx.
Liquid chlorophyll of commerce	ʒss.

Shake well together, and after standing twelve hours decant; filter the 'foots,' and in the mixture dissolve

Camphor	gr. 130
Pyroxylin	ʒss.

The product (20 oz.) is an elegant fluid plaster. The B.P.C. formula resembles this, without chlorophyll, and with castor oil 192 minims and Canada balsam 350 grs. in 20 oz.

Collodium Callosum
(syn. *Corn-paint*)

Acid. salicylic.	℈ij.
Ext. cannab. ind.	gr. vj.
Alcohol. absol.	ʒj.
Collodium flex. ad	ʒj.

Mix the first three and add the collodion.

Coll. Salicyl. Co., B.P.C., is acid 12, extract 2, acetone 30, acetone collodion to 100.

Corn-paint, P.F. 71

Acid. salicylic.	ʒiv.
Ext. cannab. ind.	gr. xxxij.
Æther.	ʒx.
S.V.R.	ʒij.
Collod. flex.	ʒiiss.

Corn-solvent
P.F. 2

Acid. salicylici	pt. viij.
Ext. cannab. indic.	pt. j.
Collod. flex. (¾ strength)	pt. Lx.

P.F. 3

Acid. salicylic.	gr. xv.
Ext. cannabis ind.	gr. ij.
Collodii	ʒiss.
Æther. methylat.	ʒss.

M.S.A.

P.F. 4

Acid. salicylic.	ʒj.
Ext. cannabis ind.	gr. viij.
Collodii flex.	ʒvj.
Æther. meth.	ʒij.

M.S.A.

Corn and Wart Paint

Acid. salicylic.	gr. xxiv.
Acid. lactic. conc.	♏xviij.
Ext. cannab. ind.	gr. vj.
Collodii	ʒj.

M.S.A.

For other formulas refer to the index.

Collodium Capsici

Prepared in the same manner as arnica collodion and of the same strength; or dissolve oleo-resin of capsicum ʒiss. in ether ℥xij. and spirit ℥iv., filter if necessary, and add the requisite weight of pyroxylin.

Carbolic Colloid

Sir B. W. Richardson's formula is phenol ♑j. to styptic colloid ℥j. For toothache, equal parts of plain collodion and melted absolute phenol. Mix in the bottle given to the customer.

Collodium Crotonatum

(syn. *Coll. Tiglii, N.F.*)

Croton oil	10 grams
Flexible collodion	90 grams

Coll. Crotonis, B.P.C., same proportions fluid.

Collodium Iodatum, N.F.

Iodine reduced to powder	5 grams
Flexible collodion	95 grams

Introduce the iodine into a bottle, add the flexible collodion, and agitate until the iodine is dissolved.

NOTE.—It is better to shake the iodine with a little spirit of ether before adding the collodion.

Coll. Iodi, B.P.C.: Iodine 6·5, flexible collodion to 100.

Collodium Iodoformatum, N.F.

Same strength as coll. iodatum.

Coll. Iodoformi, B.P.C.: Iodoform 1, flexible collodion 9.

Collodium Salicylatum Co., C.F.

(*Corn-collodion*)

Acid. salicylici	ʒj. gr. XLV.
Ext. cannabis ind.	ʒiss.
Alcohol. (90-per-cent.)	ʒj.
Collodium flexile ad	℥x.

Collodium Stypticum

(*Styptic Colloid*)

The late Sir B. W. Richardson, M.D., introduced this, directing it to be made by digesting pure tannin in absolute alcohol for several days, then adding absolute ether until the mixture becomes fluid; next guncotton until it ceases to be dissolved; lastly a little tincture of benzoin. The Br. P.C. formula is

Benzoin	gr. xliv.
Absolute alcohol	ʒj.

Dissolve, filter, and add

Tannin	ʒj.
Pure ether	℥iv.
Pyroxylin	gr. xliv

Mix, and in three days decant.

B.P.C. is tr. benzoin. ʒiij., tannin. ℥iij., collodium ad ℥xx.

Another formula is

Carbolic acid	10 parts
Tannin	5 parts
Benzoic acid	5 parts
Collodion	100 parts

Agitate until solution is complete.

Collyria

The following are the strengths of eye-lotions commonly adopted, the quantities given being for 1 oz. of distilled water or finished lotion unless otherwise stated :—

Acidi boric. . .	gr. v.–x.
B.P.C. . .	2 per cent.
Acidi boric. c. ext. belladon. . .	gr. j.
Acidi tannici . .	gr. x.–ʒss.
Aluminis . .	gr. iv.
*Argenti nitratis .	gr. ss.–x.
*Atropinæ sulphat.	gr. iv.
Boracis . . .	gr. x.
*Cocainæ hydrochlor.	2 to 10 p.c.
Cupri sulphatis .	gr. j.–ij.
Hydrarg. perchloridi	1 in 5,000 to 8,000
*Physostigmin. sulphat. . .	gr. ij.
Plumbi subacet. liq. et S.V.R. . aa.	ɱx.–xx.
Zinci chloridi . . .	gr. ss.–ij.
Zinci sulphatis .	gr. j.–iv.
Zinci sulphatis gr. j. c. vin. opii ɱv.	

Those marked with an asterisk are used for dropping into the eyes, the rest for bathing them.

Acid. boric. et zinci, B.P.C.: Boric acid 1, zinc sulphate 0·1, water to 100.

Belladonnæ, B.P.C.: Green extract 0·5, water to 100.

Critchett's Eye-washes

1

Lapidis divini . .	gr. iv.
Aquæ rosæ . . .	ʒvj.

Solve.

2

Acidi borici . . .	gr. viij.
Aq. laurocerasi . .	ʒss.
Aq. sambuci ad . .	ʒviij.

M. et S.

The first lotion is for simple inflamed eyes; the second is to be used when there is much irritation.

Mackenzie's Eye-lotion

Hydrarg. perchlor. . .	gr. j.
Ammon. chlor. . .	gr. vj.
Pulv. cocci cacti . .	gr. iss.
Spt. vini rect. . . .	ʒj.
Aquam ad . . .	ʒvj.

Mix and after twelve hours filter.

(LABEL)

Lotion for the Eye.

Directions.—Pour out about a tablespoonful of this fluid, and mix it with as much boiling water in a teacup. With a piece of old linen or soft sponge bathe the eyes with the mixture while it is yet warm for a few minutes, throwing back the head, so as to allow a little to flow in upon the eye.

Keep the cup covered, and, having rewarmed the contents, repeat the bathing of the eye three times a day.

Mackenzie's Eye-ointment, sometimes required for use with or alternatively to the lotion, is a mixture of hyd. ox. flav. gr. iv., et adipis ʒj.

Wardrop's Eye-lotion

Liq. ammon. acet. . .	ʒj.
Aquæ rosæ . . .	ʒvij.

Complexion-ovals

Ferrous-carbonate mass .	gr. ij.
Calcium sulphide . .	gr. ss.

Clark's Stomachic Powder

Pulv. rhei . . .	ʒj.
Sodii bicarbonatis . .	ʒij.
Pulv. cinnamomi co. .	ʒj.

Misc bene.

Dose: 10 to 15 grains.

This was a favourite prescription of the late Sir Andrew Clark, Bart., M.D.

CONFECTIONES—CONFECTIONS

Carruthers' Electuary

Pulv. potass. bitart.	ʒvj.
Pulv. jalapæ	ʒij.
Sulphur. sublim.	℥iss.
Conf. sennæ	℥iij.
Syr.	q.s.

ut fiat electuarium

Dose: A teaspoonful, more or less, as a laxative, for those suffering from piles.

Lumbago-confection

Pulv. res. guaiaci	℥j.
Pulv. rhei	ʒij.
Sulphuris	ʒj.
Potass. tart. acid.	ʒj.
Mellis	ʒiv.–ʒviij.

M.S.A.

Cap. ʒij. ad ℥j. nocte maneque.

A modification of Chelsea Pensioner, p. 578.

Confectio Damocratis or Mithridate.—An ancient confection, which survived through centuries to find a place in a modified form in the old London Pharmacopœias, the recipe having forty-five ingredients, or about half the original number. 'Theriaca Andromachi' was a similar preparation; indeed, the two are sometimes confounded. It would serve no useful purpose to take up half-a-dozen pages by repeating these formulas, even although *The Chemist and Druggist* has sometimes been asked for them, and an occasional, though rare, recipe turns up containing the confection or theriaca. As a curiosity in the improved pharmacy of the eighteenth century, we quote the Edinburgh formula :—

Theriaca Edinensis

Virginian snake-root	10 oz.
Contrayerva-root	6 oz.
Resin of guaiacum	4 oz.
Lesser cardamom seeds	2 oz.
Myrrh, English saffron, opium	each 1 oz.

Rob of elderberries, thrice the weight of the powders.
Canary wine, as much as is sufficient to dissolve the opium.

Make them into an electuary according to art.

Pulv. cretæ aromat. c. opio, B.P. 1885, was a fair substitute for mithridate and theriaca, but the absence of saffron from the 1898 powder spoils it.

Rob of elderberries is an interesting pharmaceutical fossil. Once there were several medicinal 'robs,' the term being applied to inspissated vegetable juices, generally containing added sugar. Rob of elderberries was made by adding

½ lb. of sugar to 2 quarts of strained elderberry juice, and evaporating the mixture to the consistence of honey.

Chelsea Pensioner, sometimes called 'confectio guaiaci composita' and 'confectio sulphuris et guaiaci composita,' is a celebrated preparation for rheumatism and gout, the origin of which is sufficiently obscure to make it interesting.

Some say Lord Amherst, others Lord Anson, got the prescription from an old soldier in Chelsea Hospital, paying him for it 300*l.* or 500*l.* and an annuity of 30*l.* We have made diligent inquiry as to the truth of these statements, the result being that it is highly improbable that Lord Anson (his descendant is the Earl of Lichfield) ever had anything to do with it; but probably Jeffrey, the first Baron Amherst, a commander-in-chief of the British army in North America, who died in 1797, may have got it from the pensioner. Be that as it may, the original prescription has grown into dozens of variations since 1821, when it first seems to have appeared in medical or pharmaceutical text-books. We subjoin two formulas:—

The Original

[*Conf. Guaiaci Co.*, B.P.C.]

		B.P.C.
Pulv. guaiaci	℥j.	1
Pulv. rhei	℥ij.	2
Potass. bitartratis	℥j.	7·5
Sulphur.	℥ij.	14·5
Nucis myristicæ	No. 1	1
Mel. lb. j. [℥xij.] vel q.s. ut fiat electuarium.		74

A Common Modification

Pulv. rhei	ʒij.
Pulv. guaiaci	℥ss.
Pulv. potass. nit.	℥j.
Sulphur. sublim.	℥j.
Pulv. sinapis	℥j.
Mel.	q.s.

M. Fiat elect.

Dose: 1 to 2 teaspoonfuls ['tablespoonfuls' is given by some authorities] night and morning. A glass of hot rum-and-water after going to bed; if much fever, white wine and water hot.

Our inquiry elicited the fact that some writer had changed 'p. pot. bit.' into 'p. pot. nit.,' with the result that nitre instead of cream of tartar occurs in half the published formulas. Probably the mustard has crept into the place of nutmeg by a similar accident, and pulv. zingib., which is given in several formulas, may be an elegant addition. Treacle sometimes takes the place of honey. Mr. F. W. Truman has stated (*C & D.*, June 11, 1904) that milk of sulphur is an ingredient,

and that this acts better than precipitated sulphur, on account of the lime sulphate in it. We have never seen a formula with either—always 'sublimed sulphur' or 'sulphur.' Mr. Truman states that his firm's books, 'dating back to the beginning of last century, contain either lac sulphur. or sulphur. præcip.' A peculiar circumstance. In the following table are a few of the current formulas, to which we give place as a silent comment upon the vicissitudes of prescriptions :—

Ingredients	Squire	Cooley	Remington	Whitla	Martindale and Lond. Hosp.	Edin. R. Inf. Phar.	Hager
Pulv. guaiaci . .	℥vj.	℥ss.	℥j.	℥j.	℥ij.	℥iv.	℥ss.
Pulv. sinapis . .	℥iss.	—	—	℥ij.	—	℥j	—
Sulphur. sublim. .	℥iss.	℥viij.	℥ij.	℥ij.	℥iij.	℥j.	℥vj.
Pulv. rhei. . .	℥iij.	℥j.	℥ij.	℥ss.	—	℥ij.	℥j.
Pulv. potass. nit. .	℥iij.	—	—	℥ss.	—	℥ij.	—
Pulv. potass. bitart..	—	℥ij.	℥j.	—	—	—	℥iij.
Pulv. myristicæ .	—	No. iv.	℥j.	—	—	—	℥ss.
Magnes. carb. .	—	—	—	—	℥ij.	—	—
Pulv. zingib. . .	—	—	—	—	℥j.	—	—
Mellis vel . .	q.s.	lb. iij.	℥x.	q.s.	—	q.s.	℥50
Theriacæ . .	q.s.	—	—	q.s.	℥xij.	—	—

Cramp Draught

The subjoined formula is a specific for a common complaint, not dangerous but very painful—viz., cramp in the legs and feet, as well as of the stomach. Relief comes five minutes after taking the following draught :—

Tr. aconiti, B.P. '98	♏v.
Sodii bromid. . . .	gr. xij.
Tr. chloroformi co. .	♏xv.
Aq. menthæ pip. ad	℥j.

Repeat in an hour or two if required.

Coster's Paste

[*Pigment. Picis c. Iodo*, B.P.C.]

Iodi	℥ij.
Ol. picis rect. . . .	℥j.

Mix carefully, applying heat if necessary to promote ebullition, after which allow the mixture to cool, and preserve.

This is the original formula. Remington gives one consisting of similar proportions as above of alcoholic iodine (1 in 8) and oil of cade, but this is wrong.

CREMORES—CREAMS

Cremor Bismuthi

Hydrated oxide of bismuth . . .	℥j.
Water	℥iv.

Rub together until smooth.

This is the recognised American and English formula for cream of bismuth. Another recipe is of the same strength, but the vehicle

is glycerine ʒj. and cremor simplicis ʒiij., the latter being a mixture of two egg-yolks, sugar ʒiiss., and fresh milk heated to 50°–60° C. ʒv.

Hydrated oxide of bismuth ($Bi_2O_3.3H_2O$), for cremor bismuthi, should be recently made, and, if possible, moist, as in that condition the particles are exceedingly fine, and make a much smoother cream than the dried hydrated oxide. The way to prepare it is clearly laid down by the 'National Formulary,' viz.: Mix 6 oz. of bismuth subnitrate with 4 oz. of water and add 9 oz. (by weight) of nitric acid, agitate, and heat to promote solution. When this is done pour the solution into a gallon of water, to which 1 oz. (by weight) of nitric acid has been added, and strain through absorbent cotton. Mix 12 oz. (by weight) of ammonia solution (10 per cent.) with 2 gals. of water, and into this pour the bismuth solution slowly and with constant stirring. A 4-gal. jar should be used to hold the mixed solutions. After the precipitate subsides pour off the clear liquid and fill up the jar with water, again stirring; and so repeat the washing twice. Finally dissolve an ounce of sodium bicarbonate in 3 or 4 gals. of water, wash the precipitate with this, pour upon a calico strainer, and continue the washing until the wash-water is quite tasteless. Let the precipitate dry on the strainer (if it is wanted dry) and rub to powder by passing through a sieve.

There is always some loss of bismuth, but not much, in preparing by precipitation with ammonia, ammonia salts being excellent solvents of bismuth compounds. The degree of hydration in making hydrated oxide of bismuth is a bit erratic, but the compound formed does not appear to be $Bi(OH)_3$—*i.e.*, a hydroxide. Experience, however, has demonstrated that the compound prepared as above directed is constantly $Bi_2O_3.3H_2O$, and if no heat is used in drying it it remains so. As 15 parts of bismuth subnitrate ($BiONO_3.H_2O$) yield 26 parts of the hydrated oxide ($Bi_2O_3.3H_2O$), by taking subnitrate in proportion to the amount of hydrated oxide required, the weight of the moist precipitate equal to the cremor bismuthi required may be reckoned. This preparation

should not be confounded with lac bismuthi. Cremor bismuthi et cerii is made by adding cerium oxalate gr. xxiv. to the formula on p. 579.

Cremor Camphoræ

Sapon. commun. . .	ʒiss.
Camphor. . . .	ʒvj.
Ammon. chlorid. . .	ʒiss.
Liq. ammoniæ . .	ʒiss.
Ol. terebinth. . . .	ʒvj.
Aquæ	ʒxij.

Dissolve the soap in half the water mixed with the ammonia, and the chloride in the rest of the water. Mix, add the camphor dissolved in the turpentine, and shake well to emulsify.

Cremor Hamamelidis

Essence of witch hazel .	ʒij.
Soft paraffin . . .	ʒiv.
Lanoline . . .	ʒiv.

Mix thoroughly.

NOTE.—'Hazeline cream' is a trade-marked title, and the above formula does not produce a similar preparation.

Cremor Lithargyri (Squire)

Solution of subacetate of lead	ʒj.
Cream	ʒvij.

Used as an application in eczema.

Cremor Morrhuæ

See Emulsions of Cod-liver Oil. The name was originally applied to an emulsion made with yolk of egg.

Cremor Zinci (Martindale)

Zinci oxidi . . .	℈iv.
Vaselini . . .	ʒj.

Mix and perfume.

B.P.C. gives oxide 15, otto of rose 0·1, and white soft paraffin to 100.

Dec. Aloes Co. Conc.

Finest red Socotrine aloes	ʒij.
Saffron	ʒss.
Boiling distilled water .	ʒxx.

Stir well together; let stand for twelve hours; strain. Add to the strained infusion

Glucose-syrup (by weight)	ʒvj.

Evaporate on a water-bath to 9½ fl. oz. Coarsely powder

Elect gum myrrh . .	ʒss.

Rub up with

Carbonate of potassium .	ʒss.

and

Liquid extract of liquorice	ʒviij.

added by degrees. Let it stand for twelve hours; strain; mix with the solution of aloes. Add

Tincture of cardamoms, concentrated . .	ʒviiss.

and water, if required, to make ʒxxv.

The tincture is made by percolating the spices (in four times the quantity ordered in the B.P.) with proof spirit, omitting the raisins, the fruit-sugar of which is replaced by a Glucose-syrup, which is a mixture of 12 parts liquid glucose, 3 parts glycerine, and 1 part water, all by weight.

One part of dec. aloes co. conc. diluted with 3 parts of water represents adequately in strength, and almost exactly in flavour, the recent decoction (B.P. 1885).

Dobell's Aperient.—A general aperient which Dr. Horace Dobell pretty frequently prescribed when he was in practice. It is for the purpose of establishing a regular and complete action of the liver and of the whole alimentary canal. The Board of Customs and Excise treat 'Dobell's Aperient' as a non-dutiable title.

(Original Formula)

Ext. cascar. sagrad. liq.	gr. iij.
Ext. rhei	gr. ij.
Jalapini	gr. j.
Podophyllini	gr. ¾
Cocainæ hydrochlor.	gr. ½
Ol. caryoph.	♏ss.
Glycerini	♏v.
Spt. vini rect. ad	ʒss.

Dissolve carefully and filter.

Dose: ♏x. to ♏xxx.

The ext. casc. sag. liq. is made by evaporating ♏xij. of liquid aqueous extract down to gr. iij.

NOTE.—This is much more easily made by the annexed modification suggested by Mr. J. F. Brown.

(Modified)

Ext. cascar. sagrad. liq.	♏cxliv.
Ext. rhei	gr. xxiv.
Jalapini	gr. xij.
Tr. podophyllini (1 gr. in 60 min.)	ʒss.
Cocainæ hydrochlor. (dissolved in ʒss. aqua)	gr. ij.
Olei caryophylli	♏vj.
Glycerini	ʒj.
Spt. vini rect. ad	ʒiss.

Dissolve the jalapin in about 3 dr. of the spirit; add the solution of cocaine and the glycerine, and rub up the extract of rhubarb in the mixture until dissolved; mix in the remaining ingredients and filter.

ʒj. = ʒss. of the original.

DRUNKENNESS OR DIPSOMANIA CURES.

Many nostrums for subduing the 'drink-crave' owe their activity to alcohol or aromatics, or both; and it rarely happens that they are successful unless they are well backed up by moral influence. The few formulas which we quote here will suffice to show the nature of the compounds which are in request. One of the oldest and most esteemed in religious circles is the draught erroneously called the 'Rev. Newman Hall's Dipsomania-cure.' It was this preacher's father, the Rev. Vine Hall, who made the compound known through a tract published by Drummond, of Stirling. In it the writer said: 'A physician was consulted as to the possibility of medicine being rendered effectual to stop the disposition to intemperance, and he pledged his credit that if his prescription was punctually

followed the happiest results would ensue. The remedy was as follows : Sulphate of iron, 5 grains; magnesia, 10 grains; peppermint-water, 11 drachms; spirit of nutmeg, 1 drachm. This forms one draught; two draughts to be taken each day. It will be seen that this draught is equivalent in alcoholic strength to a dessertspoonful of whisky, and this ingredient, together with the stimulating effect of the nutmeg and tonic properties of iron, may gradually wean the victim from the craving for alcohol. The originator advised "prayer" to be used along with it.'

One of the most famous drink-cures of recent times is that going by the name 'Gold Cure,' and invented by an American doctor called Keeley. This cure was seriously considered by the Society for the Study of Inebriety, who passed the following resolutions in respect to it :—

> This meeting is of opinion that any so-called 'cures' for inebriety the composition of which is not disclosed are unfit to be commended by honourable members of the medical profession, who are bound to place the full details of their treatment before their professional colleagues, a requirement as essential in the interest of the public as it is consonant with the disinterested practice of scientific therapeutics.
>
> This meeting, having been informed by a competent London analyst, who has made a special analysis, that the alleged 'bichloride-of-gold cure' shows no trace of gold or of chlorides, and contains 27·55 per cent. of alcohol, condemns unreservedly the prescription of such an intoxicating preparation to an inebriate.

The Keeley treatment consists in giving the patients a hypodermic injection and a mixture, keeping them meanwhile under the surveillance characteristic of a home for inebriates. The analysis already referred to showed that the mixture contains no active ingredient except alcohol and a trace of a mercurial salt, with 6 per cent. of sugar; but it is not in accordance with the view generally accepted by dipsomania specialists, who agree that strychnine and atropine play an important, because rational, part in the cure. The following are some of the formulas which have been suggested for the treatment, No. III. being the best.

The Injection

Strychninæ sulphat.	gr. ss.
Atropinæ	gr. ¼
Acidi borici	gr. xv.
Aq. destillat.	ʒiv.

Another formula for this gives strych. nit. gr. ix. to aq. ʒiv., coloured with potas. permang.

The Mixture or 'Whisky'

I

Sodio-auric chloride	gr. xij.
Ammonium chloride	gr. vj.
Strychnine nitrate	gr. j.
Atropine	gr. ¼
Fluid extract of cinchona	ʒiij.
Fluid extract of coca	ʒj.
Glycerine	ʒj.
Water	ʒj.

Dose: One teaspoonful every two hours while awake.

II

Apomorphin. muriat.	gr. j.
Aloin.	gr. ij.
Tr. cinchon. co.	ʒiij.
Aq.	ʒj.

A teaspoonful every two hours while awake.

III

Auri et sodii chlorid.	gr. xxiv.
Strychninæ nitrat.	gr. ij.
Atropinæ sulphat.	gr. ⅔
Ammonii chloridi	gr. xij.
Aloini	gr. ij.
Hydrastinæ	gr. iv.
Ext. cinchonæ liq.	ʒvj.
Ext. cocæ liq.	ʒij.
Glycerini	ʒij.
Aquæ	ʒij.

Dose: As above.

Patients who are undergoing the Keeley treatment know that they are getting 'whisky' of some kind in the red mixture, and the truth of the composition lies somewhere between the first and second of the above formulas; but there is good reason for believing that there is neither strychnine nor atropine in the mixture, but apomorphine muriate in sufficient dose to cause a nauseating effect, that being part of the 'cure.' Strychnine has a good effect upon dipsomaniacs, and in conjunction with atropine is now recognised by medical specialists who have charge of alcohol-maniacs and morphino-maniacs to be sound treatment. A mixture of the fluid extracts of ipecac. and viburnum prunifolium is sometimes employed for female inebriates who are apt to be specially excitable at their menstrual periods. It is usual to begin with $\frac{1}{60}$ gr. of strychnine and $\frac{1}{120}$ gr. of atropine sulphate, increasing the former to $\frac{1}{30}$ gr. and the latter to not more than $\frac{1}{80}$ gr. three or four times daily. In 1893 and 1894 considerable excitement was caused in England by the advent of the Tyson Cure, which under the ægis of religious institutions enjoyed much popularity. This 'cure' was the subject of a prosecution under the Pharmacy Act of Victoria in 1893,

when the Government analyst reported that he had obtained from the 'cure' 0·11 per cent. of strychnine and brucine.

Quite distinct from these alcoholic preparations are those which owe their virtues entirely to solid ingredients. A well-known specific for drunkenness is sold in powders, each weighing about 8 gr. The following are attempts at imitating it:

I

Pulv. hydrastis canad.	gr. ss.
Pulv. cinchon. pal.	gr. ss.
Pulv. capsici	gr. ⅛
Pulv. zingib.	gr. iij.
Pulv. glycyrrhiz.	gr. iv.

Fiat pulv.

II

Pulv. zingib.	℥ss.
Pulv. canellæ	℥ss.
Pulv. fœniculæ	℈j.
Pulv. cassiæ	℈ij.
Pulv. glycyrrhiz.	ʒij.

M. et div. in pulv. gr. viij.

A more recent anti-dipsomania powder differs from the foregoing in containing an appreciable quantity of ipecacuanha, so that those who take it become sick. About 5 gr. of pulv. ipecac. and the same of canella come near it. The following are also useful formulas :—

Delirium-tremens Draught

(Dr. Stretch Dowse)

Liq. opii sed. (Battley)	♏XL.
Liq. cinchonæ (Battley)	ʒss.
Aquam ad	ʒij.

Misce fiat haustus.

To be given with 6 oz. of brandy beaten up with two eggs.

Drink-cure

(Resembling a greatly advertised powder, to be given secretly to the victim)

Pulv. potass. bromid.	gr. ij.
Pulv. sodæ tartarat.	gr. ss.

Misce pro dose.

Sometimes the powders contain 5 gr. of bromide. Another 'cure' similarly advertised is sodii bicarb. !

Drinkers' Tonics

I

Liq. atropinæ sulphat.	℈ss.
Liq. strychninæ hydrochlor.	℈j.
Ext. cinchonæ liq.	ʒj.
Ext. cocæ liq.	ʒij.
Glycerini	ʒj.
Aq. chloroformi ad	ʒviij.

M.S.A.

Dose: ʒss. in water every four hours.

Excellent to give a man who needs something regularly when he returns to business.

II

For Nervousness after Drinking

Potassii bromidi	℈ij.
Syr. hypophos. co.	ʒij.
Aquam ad	ʒviij.

M.

ʒss. omni quartis horis.

Dr. D'Unger's Cure for Drunkenness is ext. cinchon. rub. liq., made by macerating 1 lb. of the bark

in 16 oz. of proof spirit, and producing 8 oz. of liquid extract. Dose to begin with, a teaspoonful every three hours ; on the third day half a teaspoonful, then 15 drops, and so on, a daily reduction until a cure is effected, which was said to be seven days. That was five-and-twenty years ago, and there are drunkards yet.

For further information in regard to the treatment of drunkenness, see articles in *The Chemist and Druggist*, 1904, II., 187, and 1911, I., 592.

Eau d'Arquebusade *vel* **Aqua Vulneraria**

I

Flor. lavandulæ	ʒj.
Herb. absinthii	ʒj.
Herb. hyssopi	ʒj.
Herb. menthæ pip.	ʒj.
Herb. rosmarini	ʒj.
Herb. rutæ	ʒj.
Herb. salviæ	ʒj.
Spt. rectificat.	ʒxxiij.
Aquæ	Oiiss.

Macerate for a fortnight and distil 42 oz.

II

Oils of wormwood, lavender, thyme, peppermint, rosemary, rue, and sage, of each	mxvj.
Rectified spirit	ʒxxx.

Mix and add

Warm water	ʒXL.

Strain through cotton-wool.

The first is a simplified form of an old and complex recipe, and the second is for extemporaneous use.

Eau d'Arquebus de de Théden

Rectified spirit	ʒviiss.
Distilled wine-vinegar	ʒviiss.
Dilute sulphuric acid	ʒiss.
White sugar	ʒij.

Mix.

Eau de Luce

[*Tr. Ammoniæ Co., P.L.* 1851, *and B.P.C.* (*without oil of amber*) ; *Spt. Volatilis Succinatus, etc.*]

I

Mastic	ʒij.
Rectified spirit	ʒix.
Oil of lavender	mxiv.
Oil of amber	miv.
Strong solution of ammonia	Oj.

Macerate the mastic in the spirit, that it may dissolve, and pour off the clear tincture ; then add the other ingredients and shake them all together.

The oil of amber was omitted from the 1851 edition of the London Pharmacopœia at the suggestion of Brande. This was a mistake, for the amber odour had been associated with the spirit for a century before the London authorities removed it. Eau de Luce was invented by an apothecary at Lille, and the first formula followed in this country was a pure succinated ammonia without mastic ; but as it lost its opacity soon the resin was introduced. Soap and benzoin are used on the Continent for the same purpose.

II

Tincture of benzoin .	ʒj.
Oil of lavender .	gtt. x.
Oil of amber .	gtt. v.
Soft soap .	gr. iv.
Solution of ammonia	ʒij.

Mix and filter.

Originally used as a specific for the bites of venomous snakes; in these latter days its reputation has been reduced to the simple dictum of the authors of the 'Extra Pharmacopœia'—'Topically relieves bites of insects'—so does plain ammonia. It was, and is, esteemed as 'a powerful nervous stimulant. Dose about 20 or 30 minims in an ounce and a half of camphor mixture.'

III. The First Formula

Oil of amber .	60 drops
Rectified spirit .	1 oz.
Volatile spirit of ammonia .	12 oz.

Mix them together and distil in a retort with a moderate fire.

Eau Sédative

(syn. *Aqua Sedativa, N.F.; Lotio Ammoniacalis Camphorata, Fr. Cod.; Eau Sédative de Raspail*)

	Codex.	N.F.
Liquor. ammoniæ	ʒj.	125 c.c.
Sal. marin.	ʒj.	sodii chlorid. 65 grams
Spt. camphor.	ʒiss.	12 c.c.
Spt. rectificat.	ʒiss.	—
Aquæ destillatæ	ʒxvj.	ad 1,000 c.c.

Dissolve the salt in half the water, add the ammonia and spirits, then the rest of the water.

Originally there were three strengths of Raspail's Eau Sédative—strong, medium, and common. The 'National Formulary' one is the strongest, and common salt is used instead of sea salt, which gives the real milky-looking eau sédative. The late Mr. Joseph Ince said of the lotion:—

> The effect of this remedy is described as nothing less than marvellous, its action depending partly on the absorption of ammonia and salt (the two great solvents of the coagulation of the blood) by the superficial vessels of the skin, and partly, of course, upon the camphor which it contains. By keeping it acquires a smell of bitter almonds, and after a certain time a white powder is deposited. It is not then considered as unfit for use, but requires to be well shaken before applying it. Under the influence of this preparation fever is said to disappear, and endless maladies to be subdued.

Truly a marvellous remedy, but not without merit, if we may judge by its re-introduction under another name.

Elæosacchara are aromatic sugars, literally 'oil sugars,' much esteemed on the Continent for flavouring medicines. They are made by triturating essential oils with powdered sugar and sifting once or twice. The recognised strength is 2 per cent., or 9 minims to each ounce (avoir.) of icing-sugar. The most common 'oil sugars' are anise, fennel, and peppermint.

ELIXIRS

These preparations were of old acid or balsamic alcoholic liquids, examples surviving to this day in elixir of vitriol, paregoric elixir, and *elixir proprietatis* (tr. aloes co.); but United States pharmacists have created a new class of elixirs, consisting of weakly alcoholic, sweet, and aromatic liquids, which are supposed to be typical of 'elegant pharmacy.' Such preparations are numbered by the score, but so far as official recognition is concerned, in the United States they are decreasing in favour, while there and elsewhere, during the past half-dozen years, proprietary medicines of this class have been increasing in number. This latter fact is significant, especially as it is as true of Great Britain as of the United States.

As a result, semi-official formulas for elixirs are again growing in number, and even the British Pharmacopœia has succumbed by the recognition of two elixirs, which are described as syrups—syrupus aromaticus and syrupus cascaræ aromaticus. To give a green colour to tinctures otherwise colourless, Mr. Wilbert, of Philadelphia, recommends tincture of hempseed, which has already been referred to. Yellow with a suggestion of green is obtained by adding to a yellowish elixir a trace of indigo-carmine. As a green colouring chlorophyll, if not the most satisfactory, is by far the least objectionable, and it is well represented by the tincture of hempseed. For red colours cochineal and cudbear are most commonly used, but cherry-juice and other fruit-juices have very rich colours, which are stable in neutral or non-alkaline solutions.

Elixir Acidum Halleri

(syn. *Elixir Acidum Dippelii; Mistura Acidi Sulphurici. Also Acidum Sulphuricum Alcoholisatum, Liquor Acidus Halleri and Aqua Rabeli, B.P.C.*)

Sulphuric acid	ʒj.
Rectified spirit	ʒiij.

Both by weight. Add the acid gradually to the spirit with agitation.

NOTE.—Squire gives the above proportions—*i.e.*, 1 and 3—as representing nine continental Pharmacopœias, and also coloured with 1 per cent. of red poppies, the latter being the French form for *Eau de Rabel.* The Italian and four other Pharmacopœias prescribe equal parts by weight of acid and spirit. The preparation is practically sulphovinic acid, and is given in doses of 5 to 20 drops in sweetened water.

Elixir Adjuvans, N.F. 1896

Sweet-orange peel (rec. dried)	ʒij.
Wild-cherry bark	ʒiv.
Peeled liquorice-root	ʒviij.
Coriander	ʒj.
Caraway	ʒj.
Syrup (U.S.P.)	ʒxl.
Rectified spirit, water, of each	a sufficiency

The solids to be reduced to No. 40 powder. Macerate the bark in 4 oz. of water for twelve hours. Then mix with the other solids, damp with 4 oz. of a mixture of 1 volume of spirit and 2 volumes of water, pack in a percolator, and percolate with the dilute spirit until 93⅓ oz. of the percolate is obtained. To this add the syrup. Mix and filter.

Elixir Adjuvans, U.S.P., is made with ext. glycyrrhiz. fl. 12 and elixir. aromatic. 88. No longer in N.F. The B.P.C. is 1 and 7.

Elixir Acidi Salicylici, N.F.

Dissolve potassium citrate 125 grams in glycerine 500 c.c. by the aid of heat, add salicylic acid 85 grams, dissolve, and make up to 1,000 c.c. with aromatic elixir. Should be made as required.

Mynsicht's Elixir of Vitriol

Cinnamon, cloves, and ginger, of each 3, calamus aromaticus 8, galangal 12, sage 4, peppermint 4, cubebs 2, nutmeg 2, aloes-wood 1, lemon-peel 1, sugar candy 32, alcohol (90-per-cent.) 144, sulphuric acid 96—all by weight. Digest for three weeks and filter. Dose: 5 to 10 minims.—*Squire.*

Elixir Aletridis, Br.P.C.

Ext. aletrid. liq. ʒv., ext. glycyrrhiz. liq. ʒx., tr. aurant. ʒx., syrup. ʒviiss., aq. dest. ad ʒxx. The dose is ½ to 1 fl. dr.

B.P.C. is ext. alet. liq. 25, ext. glycyr. liq. 6, elix. simp. 45, aq. dest. ad 100.

Elixir Amarum, Ph.G. IV.

Ext. absinthii	ʒv.
Elæosacch. menth. pip.	ʒiiss.
Aq. destillat.	ʒxiiss.

Rub together, then add

Tr. aromat.	ʒiiss.
Tr. amaræ	ʒiiss.
Cretæ gallic.	ʒss.

Shake well and, after standing two days, filter.

Elixir Ammonii Bromidi, C.F.

Ammonii bromidi	ʒxiij. ℈j.
Acidi citrici	gr. xxxv.
Elixir aromatici, C.F., ad	ʒxx.

Dissolve the solids in 10 oz. of the elixir by shaking, make up to 20 oz., and filter

Same as N.F., and ʒj. = gr. v. AmBr.

B.P.C., same ingredients, but ammon. brom. 10, ac. citric. 0·5, elix. arom. ad 100.

Elixir Aromaticum, B.F.

Oil of bitter orange	♏XL.
Oil of lemon	♏X.
Oil of coriander	♏iv.
Oil of aniseed	♏j.
Alcohol (90-per-cent.)	ʒviij.
Syrup	ʒxij.
Kaolin	ʒss.
Distilled water to	ʒXL.

Dissolve the oils in the alcohol, add the solution to the syrup with constant agitation, then add the water and kaolin, and filter.

Dose: ʒss. to ʒj.

U.S.P.

Compound spirit of orange	12 c.c.
Syrup	375 c.c.
Purified talc	30 grams
Alcohol and distilled water, of each	a sufficiency

Add to the spirit enough alcohol to make 250 c.c., add the syrup gradually, then water 375 c.c. Mix the talc with this and filter clear, washing the filter with a mixture of alcohol 1 and water 3 to make 1,000 c.c. of product.

B.P.C. the same, except compound spirit of orange 12·5.

C.F.

Compound spirit of orange	ʒiij. ♏L.
Syrup	ʒxiv.
Calcium phosphate.	ʒivss. gr. xv.
Deodorised alcohol and distilled water, a sufficiency to make	ʒXL.

Prepare in the same way as U.S.P. (reserving the syrup), using a mixture of alcohol 1 and water 3, to make 26 oz. of filtrate, to which add the syrup.

Elixir Anisi
(*Aniseed Cordial, N.F. and C.F.*)

Anethol	3·5 c.c.
Oil of fennel.	0·5 c.c.
Spirit of bitter almond, U.S.P.	12 c.c.
Alcohol	240 c.c.
Syrup	625 c.c.
Water	125 c.c.
Purified talc.	15 grams

Dissolve the oils in the spirits, add the syrup and water, and set aside for twelve hours; then add the purified talc. Shake, and filter through a wetted filter until it passes through clear.

B.P.C. is approximately the same, with anethol.

Elixir Aurantii, U.S.P. 1880

Oil of orange	1 part
Cotton	2 parts
Sugar in coarse powder	100 parts
Rectified spirit and water, of each a sufficiency to make	300 parts

Mix spirit and water in the proportion of 1 to 3. Sprinkle the oil on the cotton and tease it out to distribute equally, put it into a funnel, and pass the dilute spirit through it until 200 parts are obtained. In this dissolve the sugar without heat, and strain.

C.F. Simple Elixir

Spirit of orange	ʒiv.
Deodorised alcohol.	ʒxxv.
Syrup	ʒXL.
Distilled water	ʒxxxj.

Mix, shake, and filter through talc.

Elixir Simplex, Br.P.C. (p. 598) is now *Elixir Aurantii*, B.P.C.

Elixir Aurantii Co. (Hoffmann's)

Cort. aurantii	ʒiss.
Cort. cinnamomi	ʒiiss.
Potass cabonat.	℈ij.
Vin. xerici	ʒviij.

Macerate seven days and strain, washing the marc with sherry to 7½ oz., in which dissolve

Ext. gentianæ	gr. lxxv.
Ext. absinthii	gr. lxxv.
Ext. trifolii fibr.	gr. lxxv.
Ext. cascarillæ	gr. lxxv.

Filter.

The B.P.C. form is quite different, and not bitter.

Elixir Bismuthi, N.F.

Glycerite of bismuth	ʒiv.
Glycerine	ʒiv.
Water	ʒviij.
Aromatic elixir (U.S.P.).	ʒxviij.

Mix in the above order, and filter if necessary.

Dose: 1 fluid drachm.

This is the new formula. The old one is now B.P.C., viz.: Bismuth and ammonium citrate 3·43, hot distilled water 6·25, ammonia solution a sufficiency, aromatic elixir to 100.

Bronchial and Cough Elixir

Ammon. carbonatis	ʒviij.
Sacchar. ust.	ʒiij.
Syr. papaver.	ʒxviij.
Tr. tolutanæ	ʒij. ʒij.
Tr. camph. co.	ʒv. ʒij.
Tr. scillæ	ʒiv. ʒiv.
Vini ipecac.	ʒvj. ʒvj.
Inf. senegæ conc.	ʒiv.
Chlorof. meth.	ʒss.
Spt. vini rect.	ʒiv.
Aquam ad	Oviij.

Misce.

Elixir Calcii et Sodii Glycerophosphatis, C.F.

Calcii glycerophosphat.	ʒv. ℈j.
Sodii glycerophosphat. (75 per cent.)	gr. 213
Glusidi	gr. v.
Acid. phosphoric. conc.	℈viiss.
Tr. aurantii dulc. recent.	ʒx.
Glycerini	ʒviiss.
Vini xerici	ʒx.
Aq. destillat. ad	ʒxl.

Dissolve the glycerophosphates in the water and the acids, add the other ingredients in their order, make up with water, and filter through talc.

A foreign author states that the difficulty in making this elixir is to keep the calcium glycerophosphate in solution. He has ascertained that the following keeps well and makes a palatable elixir:—

Sodium glycerophosphate	gr. 128
Calcium glycerophosphate	gr. 64
Hydrochloric acid	ʒj.
Simple syrup	ʒiv.
Compound spirit of orange	ʒj
Prune-juice to	ʒxvj.

Dissolve the sodium and calcium glycerophosphates in the prune-juice and hydrochloric acid. Add the syrup and spirit of orange. Filter if necessary.

Elixir Carica-Papaya

(Kirchgessner)

Liq. potassæ, U.S.P.	5·5 c.c.
Alcoholis	120 c.c.
Syr. simplicis	120 c.c.
Papaini	17 grams
Spt. aurantii co.	6 c.c.
Aquæ	240 c.c.

Mix the alcohol, spirit, and syrup. Dissolve the papain in the water, hot (not boiling), to which the liq. potassæ has been added. When cool, mix with the other solution.

Elixir Carminativum (Dalby)

(*Mist. Carminativ., N.F.*)

Magnes. carb.	ʒij. (troy)
Potassii carb.	gr. xlv.
Tr. opii	ʒvj.
Ol. carui	♏viij.
Ol. fœniculi	♏viij.
Ol. menthæ pip.	♏viij.
Syrupi	ʒv.
Aq. ad	ʒxxxij.

Triturate the oils with mag. carb. ʒiiss. and aq. ʒxxiv. gradually added; then add the rest of the ingredients *sec. art.*

We give this formula first place

because it is semi-official; but the preparation is not like the original, and does not keep. The following, without opium, is better:—

Magnes. calc.	℈j.
Sacchari albi	ʒij.
Tr. asafetidæ	gtt. xxx.
Tr. hyoscyami	gtt. xxx.
Ol. menthæ pip.	gtt. ij
Aq. fontan.	℥j.

M.S.A.

Dose: 5 to 10 drops.

Paris's formula contains tinctures of castor, opium, and cardamoms, and no sugar.

Elixir Cathartieum Co., N.F.

Fluidext. frangulæ	℥iv.
Fluidext. sennæ	℥iij.
Fluidext. rhei	℥ij.
Spt. menthæ pip.	ʒiiiss.
Liq. potassæ	ʒj.
Saccharin.	ʒj.
Elixir aromat. ad	℥xxxij.

Mix 20 oz. of elixir with the potash, add the saccharin, then the fluid extracts, spirit, and the rest of the elixir. After twenty-four hours filter.

The galenicals to be those of the U.S.P.

Dose: As an aperient ʒj., as a carthartic ʒiij.

This is a new formula, displacing that of N.F. 1898, for which *see* Cathartic Elixir in Supplementary Chapter.

Elixir Cascaræ

(syn. *Aromatic Cascara*)

Ext. cascar. sagrad. liq. ℥xxx., ext. glycyrrh. liq. ℥xxx., glycerini ℥xxv., saccharini (soluble) gr. cclxxx., ol. anisi ♏xx., ol. menth. pip. ♏xx., ol. anethi ♏x., ol. caryoph. ♏x., ol. cinnam. ♏x., alcohol. (90-per-cent.) ℥j. Dissolve the oils in the alcohol, and add to other ingredients. Dose: ʒj. to ʒij. as a laxative, or ʒss. thrice daily.—*A.Ph.F.*

Ext. cascar. liq. ℥v., glycerin. ℥iv., glusid. ʒss., glycyrrhizin. ammoniat. gr. 320, spt. ammon. arom. ℥j., spt. cinnam. ℥j., elixir. aromat. ad ℥xx.—*B.P.C.*

Cascara Sagrada Elixir

Messrs. Parke, Davis & Co. published in 1882 the following formula, of which they said cascara cordial is 'the result':—

	Grams
Cascar. sagrad.	100
Berberis aquifolium	37
Diluted alcohol	233
Coriander-seed	17
Angelica-root	2
Oil of anise	0·13
Oil of orange	0·13
Oil of cassia	0·005
Granulated sugar	288
Fluid extract of liquorice	12
Tincture of cudbear, a sufficiency.	
Water to make 1 litre.	

Directions.—Make a decoction of the cascara sagrada with the water at 212° F., and filter. Dissolve the sugar in the filtrate. Pack the coriander, berberis, and angelica (reduced to coarse powder) in a percolator and displace with the alcohol in which the oils have been dissolved. Lastly mix the cascara solution, the aromatic percolate, and tincture of cudbear together, add the liquorice extract, and enough water to make 1 litre.

In the following formulas soluble fluid extract of cascara, which is not so bitter as the B.P. one, may be used (*see also* B.P. p. 324):—

Ext. cascaræ sagradæ liq.	℥j.
Ext. glycyrrhizæ liq.	℥ij.
Spt. chloroformi	ʒij.
Syrupum ad	℥v.

Dose: 1 to 2 teaspoonfuls to be taken at bedtime every night.

Dr. Dujardin-Beaumetz's

Fluid extract of cascara sagrada	ʒiij.
Glycerine	ʒiij.
Oil of orange	♏vj.
Oil of cinnamon	♏ij.
Spirit	ʒviij.
Syrup	ʒx.
Water to	Oij.

Mix.

Dose: An ounce or more.

Elixir Cinchonæ, B.P.C.

(*Elixir Calisayæ, A.Ph.F. and formerly N.F.*)

Tr. cinchonæ flavæ	ʒiij.
Syr. simplicis	ʒiiss.
Glycerini	ʒiiss.
*Elixir. aromat	ʒxij.

Mix, and filter through a wet filter.

* A.Ph.F. gives Syrup Aromat.

Dose: ʒj. to ʒiv.

A form more generally used in U.S.A. (and now adopted in principle by the N.F.) is :—

Quininæ sulph.	gr. xxx.
Cinchonidinæ sulph.	gr. xv.
Aquæ bullient.	ʒviij.

Solve et adde

Elixir aromat. U.S. ad	Cong. j.
Tr. persionis comp.	q.s. to colour deep red

Some of the leading New York pharmacies adopt more complex formulas for Calisaya elixir, such as the following modification of one suggested by the late Alfred B. Taylor (Philadelphia) in 1859 :—

	Cort. cinch. rub.	3 lbs. 2 oz.
	Cort. cinnam.	6 oz.
	Fruct. coriand.	3 oz.
	Fruct. anisi	3 oz.
	Fruct. carui	1¾ oz.
	Sem. angelicæ	¾ oz.
	Rad. angelicæ	163 gr.
(1)	Spt. vini gallici	32 oz.
(2)	Aquæ	288 oz.
	Syr. aurantii	80 oz.
(3)	Spt. vini rect.	1 gal.
(4)	Spt. hibernici	½ gal.
	Syr. simpl.	1½ gal.
	Tr. persionis	q.s.

Percolate the powdered solids with 1, 2, 3, 4 mixed, then add the syrups, and colour pink with the tincture of cudbear.

Various preparations of the old N.F. Calisaya elixir are made. The hypophosphite one contains 8 gr. each of calcium and sodium hypophosphites and 2½ gr. of citric acid to 1 oz. of the elixir. For iron preparations the elixir made with Detannated Tincture of Cinchona is used. This tincture is made by shaking 8 oz. of fluid extract of cinchona with 8 oz. of freshly precipitated ferric hydrate (in the drained state), shaking well, filtering through cotton-wool, and washing the filter with proof spirit to make 16 oz. of product. Pyrophosphate of iron, in the proportion of 16 gr. to the ounce is added to this to make elixir cinchonæ et ferri. There are also combinations with bismuth, strychnine, calcium lactophosphate, pepsin, &c., for which little demand has arisen

in Great Britain, similar preparations being sold here as liquors. Some of the latter are really elixirs.

Elixir Cocæ, N.F.

Ext. cocæ liq. sol.	ʒij.
Spt. rectificat.	ʒj.
Syrup.	ʒij.
Ess. vanillæ	ʒj.
Cretæ gallicæ	ʒj.
Elixir aromat. ad	ʒxvj.

Mix, and after two days filter.

B.P.C. is ext. cocæ liq. misc. 16·5, elixir simpl. 83·5.

Elixir Daffyi

(Dicey's Formula)

Fol. sennæ	ʒiv.
Rass. guaiac.	ʒij.
Rad. inulæ	ʒij.
Sem. anisi	ʒij.
Sem. carui	ʒij.
Sem. coriandri	ʒij.
Rad. glycyrrhiz.	ʒij.
Uvæ	ʒviij.
Spt. tenuior.	Oiv. ʒxvj.

Macerate fourteen days and filter.

There are many other formulas, but the above is considered to give the best imitation of the original. Tr. sennæ co., B.P., is a descendant of it. An extemporaneous Daffy may be made by mixing spt. anisi, ext. glycyrrh. liq. aa. ʒj., tr. sennæ ad ʒij.

Elixir Digestivum

Ext. bynes	ʒiij.
Liq. peptici	ʒiss.
Ext. cascar. sag. liq.	ʒiij.
Tr. nucis vom.	ʒiiss.
Glycerini	ʒj.
Aq. chloroformi ad	ʒxij.

M.

Dose: Two tablespoonfuls after each meal for flatulent dyspepsia.

NOTE.—Not suitable for a stock remedy, as it does not keep well. *See*, however, 'Elixir Pepsini Co., C.F.,' which is virtually Elixir Digestivum Co., N.F.

Elixir Eastoni

(*Elixir Ferri, Quininæ, et Strychninæ Phosphatum, N.F.*)

Pyrophosphate of iron	gr. 128
Pure quinine	gr. 64
Strychnine	gr. ij.
Rectified spirit	ʒiv.
Distilled water	ʒij.
Aromatic elixir to	ʒxvj.

Dissolve the alkaloids in the spirit, and add 8 oz. of elixir. Dissolve the pyrophosphate in the water by the aid of a gentle heat, neutralising with ammonia if necessary; mix with the alkaloidal solution, and make up to 16 oz. with the elixir.

This is a modification of Caspari's form, and it makes an elegant green elixir.

Elixir Glusidi *vel* Saccharini,

	Br.P.C.	B.P.C.
Gluside	ʒviij.	5
Sodium bicarbonate	ʒiv.	3
Rectified spirit	ʒijss.	12·5
Water to	ʒxx.	100

Dissolve the solids in part of the water, add the spirit, filter, and wash the filter with water to 20 oz. [B.P.C., 100].

Dose: ♏v. to ♏xx.

Elixir Glycyrrhizæ Aromat., N.F.

Ext. glycyrrhizæ fl.	125 c.c.
Ol. caryophylli	0·75 c.c.
Ol. cinnamomi	0·75 c.c.
Ol. myristicæ	0·5 c.c.
Ol. fœniculi	1·5 c.c.
Talc. purif.	15 grams
Elixir aromatic. ad	1,000 c.c.

Triturate the oils with the talc, gradually add the elixir and extract,

shake, set aside for a day or two, and filter.

Elixir de Goudron, or Tar Elixir

Wood tar	ʒj.
Powdered sugar	ʒiij.
Proof spirit	ʒxx.

Mix the tar and sugar in a mortar, add the spirit, and when the sugar is dissolved filter.

See also 'Elixir Picis Co.'

Godfrey's Cordial

Most of the recipes for this preparation are not very workable, but the following one, which is a modification of an unofficial American formula, has the advantage of being definite and easily compounded :—

Oil of sassafras	ʒss.
Oil of peppermint	ʒss.
Carbonate of magnesium	ʒiij.

Rub together in a mortar for ten minutes, then triturate with 8 oz. of warm water, and pour into a bottle containing

Brandy	ʒvj.
Warm water	ʒxiv.
Bicarbonate of sodium	ʒviij.

Shake well, and when cold filter and add

Treacle	ʒxvj.
Sedative solution of opium	ʒvj.

Make up to 44 oz. with peppermint-water.

Each fluid drachm of the preparation contains 1 minim of the solution of opium. For children under a year old the cordial should be coloured with extract of liquorice and diluted with three times its volume of thin syrup.

NOTE.—Godfrey's Cordial is one of the articles specifically scheduled in the Medicine-stamp Act, 1812, and under no circumstances may it be sold in Great Britain as 'Godfrey's Cordial' without stamp-duty.

Elixir Guaranæ, Br.P.C.

Powdered guarana	ʒiv.
Light magnesia	ʒss.
Oil of cinnamon	♏vj.
Syrup	ʒij.
Alcohol (60-per-cent.)	a sufficiency

The powders are damped with 3 oz. of the alcohol, then mixed with 8 oz. of sand, and 16 oz. of percolate made. In this the oil and syrup are dissolved, and the volume made up with alcohol to 20 oz.

The B.P.C. (1911) modified this thus : Syrup, ʒij. ; cinnamon oil, ♏v. ; mix ; add tincture of guarana ʒxvj. and alcohol (60 p.c.) to ʒxx. ; filter through talc or kaolin.

Elixir Heroin. c. Terpene, B.F.

Heroin	gr. ss.
Terpene hydrate	gr. viij.
Alcohol (90-per-cent.)	ʒvj.
Syrup of Virginian prune bark	ʒiij.
Glycerine	ʒiij.

Make a solution by mixing in the above order. ʒj. = heroin gr. $\frac{1}{24}$ and terp. hyd. gr. $\frac{5}{8}$. *Elix. Acetomorph. et Terpin.*, B.P.C. and A. Ph.F. are similar with acetomorph. mur. gr. $\frac{1}{18}$ and terpen. hyd. gr. $\frac{5}{9}$ in ʒj.

Dose : ʒss. to ʒij.

Elixir Ipecacuanhæ

Ext. ipecac. liq.	ʒj.
Elixir simplicis	ʒj.
Spt. rectificat.	ʒj.
Glycerini	ʒv.
Aq. ad	ʒxx.

Mix, and after three days filter.

B.P.C. same with miscible ext.

Elixir Kola

Powdered kola	ʒij.
Glycerine	ʒxiv.
Rectified spirit	ʒx.
Cinnamon-water	ʒvj.
Essence of vanilla	ʒj.
Tincture of orange	ʒj.

Macerate for a week, and filter.

B.P.C. is liquid ext. 10, vanillin 0·1, and syrup to 100.

Elixir Lactophosphat. Co.

Calcii lactatis	ʒij.
Ac. phosph. (sp. gr. 1·500)	ʒij.
Aq.	ʒj.
Syr. ferri phosph.	ʒij.
Elixir simp. ad	ʒxvj.

Dissolve the lactate in the acid and water, add the syrup and the elixir, and filter.

Elixir Lithii Salicylatis, C.F.

Lithii salicylatis	ʒxiij. ℈j.
Elixir aromatic., C.F., ad	ʒXL.

Dissolve and filter.

ʒj. = lit ii salicylat. gr. v.

Elixir Paraldehyd.
(Martindale)

Paraldehyd.	ʒss.
Glycerini	ʒss.
Spt. rectificat.	ʒj.
Ol. cinnamom.	♏iv.
Ol. aurantii	♏viij.
Saccharini	gr. j.

Dissolve the paraldehyde, saccharin, and oils in the spirit, and add the glycerine.

Dose: ʒj. to ʒiij.

N.F. is similar to this.

Elixir Pectoral.

Ext. glycyrrhizæ	ʒss.
Pulv. acaciæ	ʒss.
Tr. camph. co.	ʒij.
Spt ætheris nitrosi	ʒij.
Vin. antimonialis	ʒj.
Ext. pruni virg. liq.	ʒj.
Aq. destillat.	ʒiv.
Elixir aromat. ad	ʒxvj.

Mix the liquorice and gum with the water, add the fluid extract, then the rest of the ingredients in their order. Set aside for a few days and filter.

There are many other pectoral elixirs, but the above, which is given 'ʒj. t.d.,' is one of the best.

Elixir Pepsini

	N.F.	B.P.C.
Glycerite of pepsin	200 c.c.	—
Pepsin	—	5
Glycerine	100 c.c.	—
Alcohol	—	15
Hydrochloric acid	4 c.c.	—
Distilled water	—	45
Aromatic elixir	to 1,000 c.c.	to 100

Dose: ʒss. to ʒj.

Elixir Pepsini Co., C.F.
(syn. *Elixir of Digestive Ferments; Elixir of Lactated Pepsin; Elixir Digestivum Co.—without tr. card. co.—N.F.*)

Pepsin	ʒiiss. gr. xxv.
Pancreatin	gr. xviiss.
Diastase	gr. xviiss.
Lactic acid	♏xv.
Hydrochloric acid	♏xx.
Glycerine	ʒv.
Water	ʒx.
Tincture of cudbear	ʒv.
Purified talcum	ʒj.
Aromatic elixir, C.F., to	ʒXL.

Mix the acids with the glycerine and water; in this dissolve the solids, add the other ingredients, and filter.

[Tr. card. co. omitted in 1910, and less acids prescribed. For E.P.C. c. Bism., *see* p. 975.]

Elixir Pepsini et Bismuthi

Scale pepsin	gr. lxiv.
Distilled water	ʒiv.
Glycerine	ʒij.
Caramel	♏iv.
Glycerite of tartarated bismuth	ʒij.
Aromatic elixir	ʒviij.

Dissolve the pepsin in 1 oz. each of glycerine and water and add the rest of the ingredients.

If a combination with strychnine is desired, dissolve strychnine, 2 gr., and tartaric acid, 2 gr., in 2½ oz. of the water, and mix with the other fluids before adding to the pepsin solution.

Elix. Peps. et Bism., B.P.C.: Stronger glycerine of pepsin 12·5, bismuth and ammonium citrate 3·43, alcohol (60-per-cent.) 5, simple elixir to 100.

Elix. Peps. et Bism. Co., B.P.C.: Same as the foregoing with morphine acetate 0·1, dil. acetic acid 0·2, tincture of nux vomica 4, dil. hydrocyanic acid 2, and cochineal solution 0·5.

Elixir Pepto-lactic.

Acid. hydrochlor. . .	ʒij.
Pulv. pepsin. sacch., U.S.P. . . .	ʒviij.
Acid. lact. conc. . .	ʒij.
Elix. aromat. . . .	ʒcxij.
Liq. carmin., N.F. .	q.s.

Elixir of Peptone

Beef peptone . . .	ʒv.
Sugar	ʒiss.
Rectified spirit . .	ʒj.
Port wine . . .	ʒiv.
Water	ʒij.

Dissolve the peptone in the water, add the sugar and the wine, and, when the sugar is dissolved, the spirit.

Elixir Picis Compositum, N.F.

Syrup of wild cherry .	ʒiij.
Syrup of tolu . . .	ʒiij.
Sulphate of morphine .	gr. iiss.
Alcohol	ʒvj.
Water	ɱlxxv.
Wine of tar to . .	ʒxvj.

Dissolve the morphine in the water, add the syrups, then the other ingredients.

A favourite cough-remedy in the United States.

Dose: ʒj.

Elixir Phosphori

I. Br. P.C. and B.P.C.

(syn. *Syrupus Phosphori*)

Tr. phosphori co. . .	ʒiv.
Glycerini . . .	ʒxvj.

Should be made as required.

Dose: ɱxv. to ʒj. (= $\frac{1}{50}$ gr.).

II. U.S.P. 1890

Spt. phosphori . .	ʒiij. ʒvj.
Ol. anisi stellat. .	ɱxvj.
Glycerini . . .	ʒix.

Shake until clear, then add gradually

Elixir aromat. ad .	ʒxvj.

ʒj. = phosphorus gr. $\frac{1}{50}$.

Elix. Phosphori Co., B.P.C. (syn. *Syr. Phosphori Co.*) is the U.S.P. preparation made with tr. phosphori co. 20, anise oil 0·2, glycerine 50, and aromatic elixir to 100.

Elixir Potassii Bromidi

N.F.

Potass. bromid. . .	ʒxliij.
Elix. aromat. ad . .	ʒxxxij.

Solve et filtra.

C.F.

Potassium bromide	ʒvij. gr. 138
Solution of carmine .	ɱxxxv.
Distilled water . .	ʒvij.
Elixir of orange to . .	ʒxl.

Dissolve the bromide in the water and about 25 oz. of the elixir; add the carmine solution and elixir to 40 oz. Let stand a few hours, and filter.

ʒj. = potassium bromide gr. x.

Elixir Proprietatis Paracelsi

(*Acid Aloes Elixir, D.A.V.*)

Powdered Cape aloes	2 grams
Powdered myrrh .	2 grams
Saffron . . .	1 gram
Rectified spirit .	24 grams
Dilute sulphuric acid (1-5)	2 grams

Macerate eight days, and filter.

Elixir Rhamni Purshiani

See 'Elix. Casc. Sagrad.'

Elixir Rubrum (Martindale)

Solution of carmine .	ʒj.
Simple elixir to . .	ʒviij.

Mix.

'Not compatible with acids.'

Elixir Rhei, Br.P.C.

Rhubarb in No. 12 powder	ʒv.
Bruised fennel	ʒij.
Glycerine	ʒiij.
Sugar	ʒiv.
Rectified spirit, 1 vol. / Water, 3 vol.	q.s.

Macerate the drugs in 15 oz. of menstruum for forty-eight hours, press; repeat with sufficient menstruum to make 15 oz. of tincture, and in it dissolve the glycerine and sugar to make 20 oz. of product.

B.P.C. (1911) modification is: Ext. rhei liq. ʒv., anethol. ɱv., syrup. ʒivss., glycer. ʒiij., alcohol. ʒss., aq. dest. ad ʒxx.—M.S.A.

Dose: ʒj. to ʒiij.

Elixir Rhei et Magnesii Acetatis, C.F. and N.F.

Calcined magnesia	gr. 355
Acetic acid	a sufficiency
Fluid extract of rhubarb	5 oz.
Aromatic elixir to	40 oz.

Dissolve the magnesia in 6 oz. of acetic acid with the aid of a gentle heat, adding, if necessary, more acetic acid, drop by drop, until the solution is neutral to test-paper. Then add the extract and enough elixir to make 40 oz.

ʒj. = magnesium acetate gr. iv. and rhubarb gr. viiss.

Elixir Sennæ, Br.P.C.

Alexandrian senna	ʒxvj.
Rectified spirit	a sufficiency
Distilled water	a sufficiency
Sugar	ʒxij.

The senna is twice macerated in spirit 4 oz. and water 12 oz., the sugar dissolved in the tincture by heating in a closed vessel on a water-bath to 200° F. for ten minutes. Strain when cold and add:—

Chloroform	ɱxxiv.
Oil of coriander	ɱiiss.
Tincture of capsicum	ʒss.
Rectified spirit	ʒiij.

Should measure 24 oz. If not, make up with proof spirit.

The first B.P.C. prescribed this, but the 1911 replaced it with *Elixir Sennæ Leguminorum*: Ext. sennæ liq. B.P.C. ʒx., sacch. alb. ʒx., chlorof. ɱxxv., ol. coriand. ɱij., tr. capsici ɱxx., alcohol. ʒss., aq. dest. ad ʒxx.—M.S.A.

Dose: ʒj. to ʒiij.

Elixir Simplex, Ex-Br.P.C.

Oil of bitter orange	ʒss.
Rectified spirit	ʒvj.
Cinnamon-water	ʒvij.
Syrup	ʒvij.

Dissolve the oil in the spirit, add the other liquids, and filter through paper moistened with proof spirit and sprinkled with kaolin.

Elixir Simplex, B.P.C.: Tr. aurantii 7·5, syrup. 40, aq. dest. 52·5.

Elixir Sodii Bromidi, N.F.

Made with sodium bromide same strength as elix. potass. brom.

Elixir Sodii Salicylatis, N.F.

Sodium salicylate	85 grams
Aromatic elixir, U.S.P., to	1,000 c.c.

Dissolve and filter.

Elixir Stoughtoni

(syn. *Tr. Absinthii Co.*, *Codex*; *Man's Friend*; *Stomachic Elixir*, &c.)

Gentian	lb. viij.
Serpentary	lb. iss.
Bitter-orange peel	lb. vj.
Safflower	lb. iss.
Red sanderswood	lb. iss.
Proof spirit	Cong. x.

Make a tincture by maceration.

On the Continent, wormwood lb. ivss., aloes ʒx., and rhubarb ʒxx. are included, and cascarilla takes the place of serpentary.

Elixir Taraxaci Co., N.F.

Fluid extract of taraxacum	35 c.c.
Fluid extract of wild-cherry bark	20 c.c.
Fluid extract of sweet-orange peel	60 c.c.
Fluid extract of liquorice	60 c.c.
Tincture of cinnamon	30 c.c.
Compound tincture of cardamoms	30 c.c.
Aromatic elixir to	1,000 c.c.

Mix, and after a few days filter.

B.P.C. adopts this. It is used to cover the bitter taste of such medicines as quinine.

Elixir Terpini Hydratis et Codeinæ, C.F.

Terpin hydrate	℈xvj.
Codeine phosphate	℈ij.
Gluside	gr. x.
Tincture of fresh sweet-orange peel	ʒx.
Alcohol (95-per-cent.)	ʒxiij.
Glycerine	ʒxx.
Elixir of orange	ʒxl.

Dissolve the hydrate, phosphate, and gluside in the alcohol with a gentle heat, add the tincture of orange, glycerine, and enough elixir to make 40 oz.

ʒj. = terpin hydrate gr. j. and codeine phosphate gr. $\frac{1}{8}$.

Elixir Terpini Hydratis et Heroinæ, C.F.

Terpin hydrate	℈xvj.
Heroine hydrochloride	gr. xiij$\frac{1}{3}$
Gluside	gr. x.
Tincture of vanilla (1 in 10)	ʒiss.
Brandy	ʒv.
Alcohol (95-per-cent.)	ʒxv.
Glycerine	ʒxx.
Elixir of orange to	ʒxl.

Dissolve the hydrate, hydrochloride, and gluside in the alcohol with a gentle heat; add the tincture of vanilla, brandy, glycerine, and elixir of orange to 40 oz.

ʒj. = terpin hydrate gr. j. and heroine hydrochloride gr. $\frac{1}{24}$.

Tonic Elixir

Acid. nit.-mur. dil.	ʒiij.
Tr. ferri perchlor.	ʒiij.
Acid. phosph. dil.	ʒiij.
Tr. nucis vom.	ʒj. ♏lxxx.
Quinin. sulph.	gr. xcvj.
Cinchonin. hydrochlor.	gr. xcvj.
Spt. chloroformi	ʒiij.
Glycerini	ʒiv.
Inf. quassiæ conc.	ʒvij.
Sacch. ust.	q.s. ad color.

M.S.A.

(ʒiss. for a 6-oz. bottle.)

Dose: ʒss. ter in die.

Phosphorised Tonic Elixir

Tr. nucis vomicæ	ʒj.
Acid. phosphoric. dil.	ʒiss.
Spt. chloroformi	ʒj.
Inf. calumbæ ad	ʒiv.

M.S.A.

Elixir pro Tussi

(Tonic)

Syr. simpl.	ʒxx.
Ext. pruni virginian. liq.	ʒvj.
Liq. morphinæ hydrochlor.	ʒiv.
Vin. ipecac.	ʒiv.
Potass. chlorat.	ʒiij.
Spt. chloroform.	ʒvj.
Aq. ad	Ovij.

Mix, and filter bright.

Dose: From ʒj. to ʒss., according to age, &c.

May be put up in 6-oz. bottles, selling at a reasonable price with good profit.

(Wild Cherry)

Cort. pruni virg.	ʒiv.
Aq. destill. ad	ʒxvj.

Infuse for twenty-four hours, strain, then add

Vin. ipecac.	ʒss.
Liq. cocci	q.s.
Spt. chloroform.	ʒij.
Syrup. scillæ ad	ʒxxxij.

M.

Dose same as the last.

2-oz. panelled bottles, 1*s.* 1½*d.*; 6-oz., 2*s.* 9*d.*

EMBROCATIONES—EMBROCATIONS

In the strict sense of the term an embrocation is a preparation to be applied to a part of the body without rubbing, either by smearing and then placing a layer of cotton-wool or the like over it, or by saturating some fabric or wool with it and placing upon the part. But the term is now used synonymously with liniment. We include here several contributed formulas for known, admitted, and approved remedies with the serial P.F. numbers. For others *see* Supplementary Chapter.

Croup-embrocation

Olei caryophylli . .	ʒj.
Olei cajuputi . . .	ʒij.
Lin. camphoræ ad . .	℥viij.

Directions.—Warm the oil by putting the bottle on the hob or in some warm water; pour some of it on the palm of the hand, and rub it into the child's chest, back, and sides. Then wrap a layer of cotton-wool round the child and put it to bed.

Domestic Embrocation

Ova	vj.
Ol. terebinth. . .	℥xx.
Spt. vin. meth. . .	℥viij.
Liq. plumbi . . .	℥iv.
Acid. acetic., B.P. . .	℥xx.
Ol. origani . . .	℥vj.
Glycerini . . .	℥ij.
Aq. dest. ad . . .	Oiv.

Household Embrocation

White of eggs . .	50 parts
Water	50 parts
Acetic acid . . .	50 parts
Methylated spirit . .	60 parts
Oil of turpentine . .	8 parts

Red Cross Embrocation

Sapon. mollis . . .	℥iss.
Aq. dest. . . .	℥v.
Liq. ammon. fort. . .	ʒj.
Camphoræ . . .	℥iss.
Ol. terebinth. . . .	℥xiij.

Roche's Embrocation

This celebrated speciality is the subject of letters patent granted on May 23, 1803, and was prepared thus:—

'Take

Oil of elder . . .	1 gall.
Red rose-leaves . .	2 oz.
Camomile flowers . .	2 oz.
Oil of caraways . .	3 oz.
Oil of rosemary . .	½ oz.
Powder of cochineal .	6 gr.
Alkanet root . . .	2 oz.

'Which several articles or ingredients must be put in an earthen or other vessel and simmered over a slow fire for the space or time of twenty-four hours, and then pressed and strained through a sieve of fine hair or linen, and the liquid produced therefrom will be fit for use.'

A quantity suited to the age of the patient is to be rubbed into the pit of the stomach the last thing before going to bed, and the stomach is to be covered with a piece of fine flannel to be worn all night and exchanged for another piece by day. Quantity.—Under six months, ½ teaspoonful; six to twelve months, ½; one to two years, a teaspoonful; above two years, 1½ teaspoonful; for an adult, 2 teaspoonfuls.

The traditional imitation is :—

Olei succini	℥ss.
Olei caryophylli	℥ss.
Olei olivæ	℥j.

Universal Embrocations
P.F. 2

Ova	x.
Acidi acetici	℥xxv.
Aquæ	℥xxx.
Camphoræ	℥iv.
Ol. succini	℥ij.
Ol. eucalypti	℥ij.
Ol. terebinth.	℥xxv.

P.F. 3

Acid. acetic.	℥j.
Liq. ammoniæ (·880)	℥j.
Mentholis	gr. xxv.
Camphoræ	℥iss.
Ol. terebinth.	℥j.
Sapon. mollis	℥ss.
Aquæ	℥iij.

Whooping-cough Embrocation
P.F. 15

Ol. olivæ	℥iij.
Ol. succini	℥iv.
Ol. caryophylli	℥ss.

EMPLASTRA—PLASTERS

Emp. Adhæsivum (Gerrard)

Lead plaster	℥xvj.
Common yellow soap	℥j.
Yellow resin	℥j.
Thus	℥j.

Melt together.

Emp. Adhæsivum Elasticum, B.P.C.

Macerate masticated india-rubber (in fine strips) 3¼ oz. in solvent mineral naphtha 19½ oz. (by weight) until a homogeneous jelly is obtained. Melt wool-fat 8½ oz. and copaiba 1 oz. and heat to 100° C. for ten minutes. When partly cooled, stir in solvent mineral naphtha 4¾ oz. (by weight), then dried powdered orris 3¼ oz., thymol 28 grains, and methyl salicylate 46 minims. When quite cold, add the indiarubber solution and mix thoroughly. Preferably should be spread at once. (*Compare with* formulas in Supplementary Chapter.)

Emp. Belladonnæ Mitius, B.P.C.

Made by evaporating ext. bellad. liq. B.P. ℥j. to a third and adding emp. resinæ to ℥iij.

Emp. Belladonnæ Viride
Br.P.C.

Made with alcoholic extract of belladonna-leaf (as much as contains 11 gr. of alkaloids) and resin plaster sufficient to produce 10 oz. of the finished plaster.

B.P.C.

Ext. belladon. exsicc.	℥iv.
Chlorophylli	q.s.
Emp. adhæsiv. elastic. ad	℥ vj.

Melt 10 oz. of plaster on water-bath ; mix the extract with it ; add chlorophyll to colour and more plaster to ℥xx.

(Merson's Improved)

Fluid extract of belladonna	℥iv.

Evaporate to 1 oz., and add

Liquid chlorophyll of commerce	℥ij.
Resin plaster to	℥xij.

Mix.

Dale's Plaster

Red-lead	lb. vj.
Sweet (colza) oil	lb. xij.

Boil to a proper consistency, then add

Resin	lb. iij.
Yellow wax	lb. iij.

Melt, mix, pull to lighten the colour, and make into ¾-oz. rolls.

Originated by the late Miss Dale, of Newcastle-on-Tyne.

Emplastrum Capsici

The U.S.P. directs this to be made by brushing adhesive plaster

(emp. resinæ on calico) with oleo-resin of capsicin, leaving a margin all round. Each square inch should have about a grain of the oleo-resin upon it.

B.P.C. is Gerrard's formula, viz.: Ext. capsici liq. 10, freed from spirit on a water-bath, and melted resin plaster added to 100. *Emp. Capsici Elasticum*, B.P.C., was Pinchbeck's, but the 1911 formula is: Evaporate 1 oz. by weight of ext. capsici liq. to half its weight, and mix with 9½ oz. of emp. adhæs. elast.

Empl. Ichthyocollæ

Isinglass	154 gr.
Alcohol	1 oz.
Glycerine	15 min.
Water	4 oz.

EMULSIONES—EMULSIONS

Emulsio Adipis (Martindale)

Prepared lard	ʒxv.
Boiling distilled water	ʒxxx.
Powdered tragacanth	ʒv.
Essential oil of almonds	♏xv.

Melt the lard, add the tragacanth, and mix. Then pour in the boiling water, and stir with a whisk till nearly cold. Add the flavour and mix.

Dose: ʒj. to ʒiij. with rum and milk as a substitute for pancreatic emulsion.

Emulsio Chlorofo mi, B.P.C.

Chloroform	5
Tr. quillaiæ	2
Aq. ad	100

Shake vigorously.

The N.F. formula was this with acacia in addition. The U.S.P. has chloroform 40 c.c., almond oil 60 c.c., tragacanth powder 10 grams, water to 1,000 c.c. Put the chloroform on the tragacanth, shake, add 250 c.c. water, again shake, emulsify the oil with this, and dilute.

Emulsio Copaibæ

Copaibæ	ʒj.
Pulv. acaciæ	ʒss.
Syrup.	ʒj.
Ol. menthæ pip.	♏viij.
Aq. destillat. ad	ʒviij.

Triturate the gum with an ounce of water, add the oil, and stir; then the copaiba gradually, diligently stirring until the whole is incorporated; then add the water [with any other medicament] and the syrup.

Dose: A tablespoonful.

Emulsio Iodoformi

For injection mix ʒiss. of finely powdered iodoform with 2 oz. of fresh starch paste (5 gr. to 1 oz.).

For external application use pulv. tragac. co. gr. j. and glycerin. ♏ij. for every 5 gr. of iodoform, with sufficient water.

B.P.C. (1911) is iodoform 10; make a smooth paste with alcohol by rubbing in a sterilised mortar, then add glycerin 70, water 20.

Emulsio Olei Morrhuæ

Cod-liver oil has been, since its introduction about the middle of last century, a veritable will-o'-the-wisp to pharmacists, as succeeding generations of them have endeavoured to make it 'palatable.' The hunt commenced when the oil was brown, rank, and abhorrently fishy, and it is a tribute to the solid conservatism of pharmacy that we treat the almost tasteless pale oil as if it were as nasty as its precursor. Still, the pale

oil was in general use long before cod-liver oil emulsions came on the field, which was in 1870 as 'Cod-liver Cream' (*see C. & D.*, 1908, I., 88, for historic notes). The author of the 'Carols of Cockayne' expressed the highest point to which the elegant pharmacy of cod-liver oil had reached at that time when he sang—

> 'In the course of my lifetime I've swallowed enough
> To have floated a ship of the line,
> And it's purely the fault of the horrible stuff
> That I've ceased to enjoy ginger-wine.
> For how can you wonder to see me recoil
> From a liquor I mix'd with my cod-liver oil?'

Since those days emulsions of the oil have displaced old-fashioned jellies, and formulas for the preparation have been produced at an alarming rate. Fortunately for us, the majority of these formulas have become antiquated, and many more of them are so obviously the concoctions of faddists that if we confine ourselves to those representing the requirements of the present time we shall satisfy all needs.

The characteristics of a good cod-liver oil emulsion may be summed up in three sentences: first, it should be an inseparable mixture of about 50 per cent. of the oil; second, it should keep when bottled for at least six months; and, third, it should be pourable and pleasant to the taste. It is not easy to get all these characteristics together, the second being the most difficult to secure. The principal precaution to observe is that the water used should be recently boiled, and if sugar is a component of the emulsion, a preservative, such as salicylic acid, should be added, especially if the flavouring oils are not strongly antiseptic. Chloroform is equally suitable in the proportion of a minim to the ounce. It also acts as a good 'covering.' The following are suitable Flavouring Oils, to be used in the proportion of a minim to each ounce of emulsion:—

I

Ol. gaultheriæ	ʒv.
Ol. sassafras	ʒv.
Ol. amygdal. essent.	ʒj.

M.

II

Ol. amygdal. essent.	ʒiss.
Ol. myristicæ	ʒij.
Ol. cinnamom. ver.	ʒij.
Ol. neroli	ɱxx.

M.

III

Ol. neroli	ʒiij.
Ol. amygdal. essent.	ʒiij.
Ol. caryoph.	ʒss.

M.

IV

Ess. amygd. essent. (1 in 20)	ʒj.
Ol. caryophylli	♏xx.
Ess. vanillæ	ʒss.

M.

The following are flavours prescribed by the 'Canadian Formulary,' the quantities given below being intended for 40 oz. of finished emulsion :—

1

Oil of gaultheria	78 min.

2

Oil of gaultheria	40 min.
Oil of sassafras	40 min.

3

Compound spirit of orange	30 min.

4

Oil of gaultheria	40 min.
Oil of bitter almond	4 min.
Oil of coriander	4 min.

5

Oil of gaultheria	30 min.
Oil of sassafras	30 min.
Oil of bitter almond	4 min.

6

Oil of gaultheria	48 min.
Oil of bitter almond	48 min.

7

Oil of neroli	30 min.
Oil of bitter almond	30 min.
Oil of cloves	4 min.

It is not possible to give more than typical examples of the respective methods of making the emulsion, and we begin with a formula which, as 'Cremor Morrhuæ,' was originally published in *The Chemist and Druggist*, and was with slight modification adopted by the Br.P.C., then by the A.Ph.F., B.P.C. (*Emuls. Ol. Morrhuæ Co.*), and is followed by some manufacturers. The emulsion keeps well throughout the winter months, especially if it is put up in recently scalded bottles :—

Egg Emulsion

Cod-liver oil	℥vj.
The yolk of one egg.	
Powdered tragacanth	gr. x.
Elixir of saccharin	ʒss.
Simple tincture of benzoin	♏xlv.
Spirit of chloroform	ʒiij.
Flavouring oils	♏xij.
Distilled water to	℥xij.

Measure 4 oz. of the distilled water, place the tragacanth in a dry mortar, and triturate with a little of the cod-liver oil ; then add the yolk of egg and stir briskly, adding water as the mixture thickens. When of a suitable consistence, add the remainder of the oil and water alternately, with constant stirring, avoiding frothing. Transfer to a pint bottle, add the elixir of saccharin, tincture of benzoin, spirit of chloroform, and oils, previously mixed ; shake well, and add distilled water, if necessary, to make 12 oz.

COMBINATIONS

With Hypophosphites: Add to each 12 oz. 48 gr. each of the hypophosphites of soda and lime dissolved in the water.

With Eucalyptus: Add to the 12 oz. ʒss. to ʒj. of eucalyptol instead of the flavouring oils.

With Phosphorus: Mix with each ounce of cod-liver oil ♏v. of ol. phosphorat., B.P.

With Pancreatin: Mix with the water for 12 oz. of emulsion zymine ʒss. and sodii bicarb. ʒiiss.

Phosphatic: Add acid. phos. dil. ʒij. to the 12 oz. of emulsion, substituting rum ʒj. for the spt. chloroformi.

Emulsio Olei Morrhuæ, A.Ph.F.

Ol. morrhuæ ʒviij., ovi vitell. ij., pulv. tragacanth. gr. viij., glusidi solub. gr. iij., tr. benz. simp. ʒj., spt. chlorof. ʒiv., ol. amygd. ess. ♏viij., sodii hypophosph., calcii hypophosph. aa. ʒj., vin. xericum ad ʒxvj. Dissolve the hypophosphites in wine. Place the tragacanth in a dry mortar, rub with a little oil, then add the yolks (previously beaten), stir briskly, add wine and oil alternately until the volume is made up. Dose: 4 to 8 fluid drachms.

Emulsio Olei Morrhuæ c. Pepsin., C.F.

Cod-liver oil	144 oz.
The yolks of twenty-four eggs.	
Glycerine	24 oz.
White sugar	40 oz.
Compound powder of acacia	4½ oz.
Lime-water	75 oz.
Diluted phosphoric acid	9 oz.
Essence of pepsin	24 oz.
Flavour (if essential oils)	3 dr.

Rub the yolks of eggs in a mortar (whites of half the eggs may be added with advantage) until a smooth paste results, add the glycerine, and triturate vigorously. Add the compound powder, then the cod-liver oil in portions of about 8 oz. at a time. When the oil is emulsified add the lime-water containing the sugar in solution and stir vigorously; then add the diluted acid, and finally add the essence of pepsin, and again stir vigorously for fifteen minutes. Allow the emulsion to stand for two hours, and strain through cheesecloth.

N.B.—A.Ph.F. Emulsion cannot be sold in the United Kingdom without a wine-licence unless sanctioned by the Revenue authorities.

Similar medication to the foregoing may be applied to emulsions made by the other methods given on the following pages.

Acacia Emulsion

Cod-liver oil	ʒiv.
Powdered gum acacia	ʒj.
Saccharin elixir	ʒss.
Flavouring oils	♏viij.
Distilled water to	ʒviij.

Mix the oils in a mortar with the gum, add 2 oz. of water and the elixir, and triturate briskly but lightly until an emulsion is formed; then add the rest of the water in portions with diligent stirring.

This form has been adopted for *Emulsio Olei Morrhuæ*, B.P.C., with the following ingredients: Cod-liver oil 50, powdered acacia 12·5, syrup 6·25, oil of bitter almonds 0·1, water to 100.

Emulsio Olei Morrhuæ, C.F.

Cod-liver oil	ʒx.
Powdered acacia	ʒiiss.
Solution of gluside	ʒj.
(or syrup of tolu ʒij.)	
Flavouring	as desired
Water to	ʒxx.

Triturate the oil and acacia together in a mortar. Add at once 5 oz. of water (temperature not less than 70° C.) and triturate briskly until a thick creamy emulsion is produced. Add the flavouring, sweetening, and enough water to make 20 oz.

Acacia-and-Tragacanth Emulsion

Pulv. acaciæ	ʒiij.
Pulv. tragacanth.	ʒiij.
Pulv. amyli	ʒiij.
Ol. morrhuæ	ʒxxiv.
Mix well and add gradually	
Aquæ	ʒxvj.
Emulsify, then mix in	
Syrup.	ʒvj.
Ol. amygdal. ess.	ɱxx.

This should have added to it acid. salicylic. ʒss., dissolved in spt. chlorof. ʒss.

Acacia Emulsions, when carefully made, are undoubtedly the best, and keep longest. They do not separate if perfectly formed at first. This is not a difficult matter when such quantities as a pint or two are made in a mortar; but on the large scale such embryonic manipulation is inadmissible. A mixing-machine, on the paddle-churn principle, should in these cases be used, and emulsification started with the assistance of a little lime-water. There is a strong prejudice amongst pharmacists against using lime-water for aiding the emulsification of cod-liver oil, because it is generally assumed that the emulsion is a soap. This is erroneous: not more than a couple of grains of soap is formed by an ounce of lime-water, and that little goes a long way in aiding emulsification of the oil. The principal reason for using lime-water, however, is that cod-liver oil generally contains a small proportion of hydroxy-acids, which, according to Möller and Heyerdahl, are the cause of the objectionable eructation following the administration of cod-liver oil, and the lime fixes these, greatly reducing the tendency to eructation and also improving the taste somewhat. The best proportion of lime-water to use is 1 part for every 4 parts of oil, reducing plain water accordingly.

Tragacanth Emulsions are not so popular as they were about the end of the 'seventies, when cod-liver oil emulsion suddenly became the rage in this country because of the

palatability of one made with tragacanth. More recently by combination of acacia or saponin with tragacanth most excellent white and creamy preparations have been put upon the market, these invariably being produced with emulsifying-machines. The most popular emulsion to-day is an acacia-and-tragacanth one, made under exceptional conditions as to asepticity and power. The saponin preparations are in considerable favour, and are not objectionable, because the saponin acts like senega in relieving cough. The following are approved Emulsifying-powders :—

St. Bart.'s Hospital	
Powdered tragacanth	2 grains
Saponin	¼ grain
To each ounce.	

Saccharin	15 grains
Saponin	65 grains
Powdered tragacanth	1,000 grains
Use 10 grains to each ounce of oil.	

The second of these is from an analysis of a commercial article, 30 grains being prescribed for each ounce of oil—obviously an excessive amount. It is reckoned that 1 dr. of tincture of quillaia will emulsify 1 oz. of cod-liver oil. Thus, to make 16 oz. of emulsion, put an ounce of the tincture into a pint bottle and add 8 oz. of the oil (2 oz. at a time), shaking well after each addition ; then add elixir of saccharin 1 dr., or tolu syrup 2 oz., and water to 16 oz., with a sufficiency of flavouring. The product is suitable for extemporaneous dispensing only. It should be clearly understood that the perfection of emulsions produced on the large scale is not the result of emulsifying-agents so much as the natural outcome of mechanical power. It stands to reason that an emulsifying-machine, driven by a 20-horse power engine, has persistence and strength of agitation which rapidly break up the oil into the minutest possible particles and cover them with the other ingredients in such a way as effectually to prevent coalescence. Of the formulas on the next page the first gives an emulsion in which the oil is in minute globules ; the second, an old Br.P.C. formula, is made more easily, but one can almost see the oil globules with the naked eye, although that is not a serious objection when palatability is the chief consideration. With mechanical power better emulsions result.

I

Pulv. tragacanthæ . .	ʒij.
Glycerini . . .	ʒij.
Aq. bullientis . . .	ʒviij.

Mix the tragacanth with the glycerine in a large mortar, and pour the boiling water upon the mixture, stirring assiduously to form a jelly. When cold add gradually, constantly stirring, a mixture of

Ol. morrhuæ . . .	ʒxxv.
Aq. calcis . . .	ʒxv.

When this is all combined—and it must be done with much care—add

Elixir saccharin. . .	ʒj.
Ol. essential. . . .	ʒss.

The taste is improved by the addition of Cerebos ʒij. dissolved in 2 oz. of chloroform-water.

II

Cod-liver oil . . .	ʒxl.
Powdered tragacanth .	℈x.
Simple tincture of benzoin	ʒss.
Spirit of chloroform .	ʒss.
Glycerine . . .	ʒij.
Flavouring oils . .	♏lxxx.
Distilled water to . .	ʒlxxx.

Place the oil in a dry Winchester quart bottle and pour in the tragacanth, tincture of benzoin, and spirit of chloroform, previously well mixed; agitate briskly for one minute; then add all at once 1 pint of distilled water and agitate as before. Lastly add the flavouring oils, glycerine, and sufficient distilled water to produce 4 pints. Shake vigorously for a few minutes.

Dextrin Emulsion, N.F.

Prepare a mucilage of powdered white dextrin by heating 1 part of it in 2 parts of distilled water, and, when dissolved, making up the weight to 3 parts. Use this in the following:—

Cod-liver oil . . .	ʒviij.
Dextrin mucilage . .	ʒv.
Syrup of tolu . . .	ʒij.
Flavouring oils . .	♏xv.
Water to . . .	ʒxvj.

Add the oil to the mucilage in small quantities at a time, mixing thoroughly, then add the flavouring, syrup, and water to the required quantity.

Irish Moss Emulsion

Chond. crisp. . . .	ʒj.
Aquæ	ʒvj.

Soak for an hour, then make a decoction by the heat of a water-bath and strain 5 oz. Add

Glycerini . . .	ʒij.
Spt. rectificat. . .	ʒj.
Ol. amygd. essent. . .	gtt. v.
Ol. cinnamom. . .	gtt. iij.

Mix, and after twelve hours add in three portions

Ol. morrhuæ . . .	ʒviij.

Shake well after each addition to make an emulsion.

Irish moss emulsion of cod-liver oil has been much reviled, perhaps because the best way of making it is not generally known. Mr. R. A. Robinson, Ph.C., in a paper on this form, says the decoction of the moss should be made by boiling it with the water for half an hour, then making up to its original bulk and straining. Mix 6 oz. of this with as much cod-liver oil in a mortar, then transfer to a 1-lb. jam-pot, and beat up thoroughly with an egg-whisk (the ordinary kind, with two circular beaters actuated by crank and wheel). The emulsion

produced is white and stable, but does not keep long. For a stock emulsion, Mr. Robinson's method may be used. The same formula and process are to be followed in making Chocolate Emulsion of cod-liver oil, using 1 oz. of Cadbury's cocoa essence in place of the rectified spirit, and essence of vanilla ♏x. to ♏xx. to flavour.

Emulsion with Condensed Milk.—Another so-called emulsifier is condensed milk, which plays a part similar to malt extract in malt and oil. To make this emulsion, mix cod-liver oil with half its weight of condensed milk; then add a mixture of glycerine and water to make the whole double the volume of oil used; flavour suitably.

As an indication of the recipes in common use by pharmacists in Great Britain we reprint the following communicated formulas from the supplementary volume issued in 1904:—

Emulsio Olei Morrhuæ

1

Pulv. tragacanthæ	gr. xxiv.
Ova	ij.
Calcii hypophosph., Sodii hypophosph. aa.	gr. xlviij.
Glycerini	ʒj.
Aq. flor. aurantii	ʒij.
Ol. morrhuæ	ʒxxiv.
Ol. amygd. amar.	♏xv.
Ol. cinnamomi	♏xxv.
Chloroformi	♏x.
Saccharini	gr. v.
Spt. jamäicencis (rum)	ʒv.
Aquam ad	ʒxxxvj.

M.S.A.

2

Mucil. lichen. hibern.	ʒxx.
Sodii hypophosph.	ʒiss.
Calcii hypophos.	ʒiss.
Ol. morrhuæ	ʒxx.
Glycerini	ʒij.
Ol. cinnamomi	♏xxv.
Ol. amygd. amar.	♏xx.
Spt. chloroformi	ʒss.
Elix. saccharini	ʒss.
Tr. benzoini simp.	ʒss.
Aquam ad	ʒlxxx.

Misce.

3

Lichen. hibern.	ʒvj.
Aquæ	Oiss.
Sodii hypophosph.	ʒv. ℈j.
Ol. morrhuæ	Oiss.
Tr. benzoin. simp.	ʒij.
Ess. amygd.	ʒij.

M.S.A.

3A

Ol. morrhuæ	ʒij.
Calcii hypophosph.	gr. iij.
Sodii hypophosph.	gr. ij.
Mucilaginis	q.s.
Aquam ad	ʒj.

Misce.

4

Ol. morrhuæ	ʒiv.
Ovi vitellum	j.
Pulv. tragac.	gr. iv.
Sodii hypophosph., Calcii hypophosph. aa.	gr. xvj.
Elixir saccharini	ʒss.
Ol. cassiæ	♏vj.
Spt. chloroformi	ʒij.
Tr. benzoini simp.	ʒss.
Aquam ad	ʒviij.

M.S.A.

5

Lichen. hibern.	ʒiiss.
Aquæ	Ovj.

Soak for an hour, make a decoction, strain, and use 5 pints. To this add

Glycerini	Oij.
Calcii hypophosph.	ʒxiij. ℈j.
Sodii hypophosph.	ʒxiij. ℈j.

Dissolve in water ʒxij., then add

Ol. amygd. ess.	♏CLX.
Ol. limonis	♏cc.
Spt. chloroformi	ʒiv. ʒij. ♏XL.
Tr. benzoin. (1 in 5)	ʒiiss.
Ol. morrhuæ	Oviij.

Make up, if necessary, with water to 2 gals.

Dose: Adults, one to two tablespoonfuls; children, two to four teaspoonfuls; to be taken in water, wine, or milk, thrice daily, after meals.

6

Chondri crispi	ʒvj.
Aq. ut fiat	ʒxxx.
Mucil. acaciæ	ʒvj.
Sodii hypophosph.	ʒiv.
Calcii hypophosph.	ʒv.
Ol. morrhuæ	ʒxlviij.
Glusidi	gr. xv.
Spt. chlorof.	ʒiij.
Ol. amygdal. essent.	♏xlviij.
Aquam ad	ʒxcvj.

Ft. emulsio.

7. *Peptonised* (*Armour's formula*)

(*Emuls. Ol. Morrhuæ Pancreatica c. Chondro, B.P.C.*)

Glycerin. pancreatin.	♏400
Glycerin. pepsin.	♏400
Ol. morrhuæ	ʒx.
Mucilag. chondri	ʒvss.
Syr. tolu.	ʒv.
Alcohol. (90-per-cent.)	ʒv.
Ol. amygd. ess. (sine acid. hydrocyan.)	♏x.
Aq. dest. ad	ʒxx.

Rub the mucilage of moss in a mortar, and add the cod-liver oil by degrees until thoroughly mixed. Then add separately the glyceroles of pancreatin and pepsin, and syrup of tolu to the emulsion, and stir well after each addition. Dissolve the essential oil of almonds in the alcohol, and add the solution to the mixture, and a sufficiency of distilled water to produce 1 pint.

Mucilago Chondri

Chondri crispi	ʒss.
Aq. dest.	ʒXL.

Wash the moss in cold water to remove impurities; boil it with the distilled water for fifteen minutes in a covered vessel, and strain with gentle pressure while hot; then pour distilled water over the contents of the strainer until the strained product measures 34 oz.

8. *Pancreatised* (*Armour's formula*)

(*Emuls. Ol. Morrhuæ Pancreatica, B.P.C.*)

Glycerin. pancreatin.	♏320
Glycerin. pepsin.	♏320
Ol. morrhuæ	ʒx.
Glusidi	gr. iij.
Liq. potassæ	ʒij.
Pulv. tragacanthæ	ʒss.
Pulv. acaciæ	ʒij.
Ol. cinnamomi	♏x.
Ol. amygd. ess. (sine acid. hydrocyan.)	♏x.
Aq. dest. ad	ʒxx.

Thoroughly mix the gums and oils in a dry mortar. Dissolve the saccharin in the liq. potassæ, make up to 8 oz. with water, and add the glyceroles of pepsin and pancreatin. Add the solution to the oils in the mortar and stir continuously until emulsified, and gradually incorporate the remainder of the water.

9

Ol. morrhuæ	ʒLX.
Pulv. tragac.	℈x.
Cort. quillaiæ	ʒss.
Aq. bullientis	Oj.
Sodii chloridi	gr. 144
Sodii hypophosph.	℈x.
Calcii hypophosph.	℈x.
Syrupi	ʒvj.
Spt. chloroformi	ʒj.
Aquæ	ʒXL.
Ol. limonis	ʒvj.
Ess. amygdalæ	ʒiv.

Infuse the bruised quillaia in the pint of boiling water for an hour, strain, cool, and proceed to emulsify the oil with this and the tragacanth, otherwise proceeding *secundum artem*.

Cod-liver Oil Emulsion with Malt

(*Emuls. Ol. Morrhuæ Pancreatica cum Malto, B.P.C.*)

Glycerin. pancreatin.	ʒij.
Ol. morrhuæ	ʒx.
Pulv. acaciæ	ʒiv.
Pulv. tragacanthæ	ʒss.
Liq. calc. sacch.	ʒiv.
Ext. bynes ad.	ʒxx.

Mix the gums and glycerole of pancreatin in a large mortar and add 2 oz. extract of malt. Mix the liq. calc. sacch. with the ol. morrhuæ, and add the same quantity of it as the extract. Mix thoroughly in a warm mortar, and add the extract and oil little by little and alternately until the whole has been added.

Cod-liver oil emulsions have taken longer to become popular on the European continent than in English-speaking countries, but now close attention is being given to them, and the following formulas show the trend of continental methods :—

I

Cod-liver oil	ʒxvj.
Oil of bitter almonds	gtt. xx.
Oil of wintergreen	gtt. xx.
Icing-sugar	ʒvj.
Powdered gum arabic	℈iv.
Powdered tragacanth	℈iv.
Distilled water	ʒviij.
Hypophosphite of lime	ʒiiss.
Hypophosphite of sodium	gr. lxxv.

Mix the oils and proceed as in the next formula.

II. Gay's

Cod-liver oil	ʒxvj.
Icing sugar	ʒvj.
Powdered gum arabic	℈iv.
Powdered tragacanth	ʒiss.
Cold coffee infusion	ʒvij.
Rum	ʒiv.

Mix the sugar and gums in a mortar. Shake the oil and coffee in a bottle, and add as much of this to the mortar-contents as will make the powder into a plastic, semi-liquid paste on stirring; then put in some of the rum and of the oil mixture *secundum artem* until the emulsion is complete.

III. Duret's

Cod-liver oil	250 grams
Powdered tragacanth	1 gram
Saccharin	0·2 gram
Sodium bicarbonate	0·1 gram
Yolks of two eggs.	
Simple tincture of benzoin	3·5 grams
Chloroform	2 grams
Oil of bitter almonds	10 drops
Alcohol	10 grams
Sodium hypophosphite	10 grams
Calcium hypophosphite	10 grams
Water to	500 grams

Dissolve the saccharin and bi-

carbonate in 150 grams of water. Mix the oil with the egg-yolks and the gum in a mortar, adding the water little by little alternately with the other liquids, thoroughly emulsifying. Finally, add the hypophosphites dissolved in the rest of the water.

IV. D.A.V.

Cod-liver oil . .	420 grams
Cinnamon oil. . .	0·3 gram
Ess. almond oil (free from prussic acid).	0·1 gram
Wintergreen oil .	0·1 gram
Powdered tragacanth	7·5 grams
Powdered acacia .	15 grams

Mix thoroughly by shaking in a dry bottle, then add the following cold solution, continuing to shake well till thoroughly emulsified :—

Calcium hypophosphite	12 grams
Sodium hypophosphite	6 grams
Water . . .	390 grams
Glycerine . . .	134 grams

In the same manner add the following solution :—

Soluble saccharin .	0·2 gram
Vanillin . . .	0·04 gram
Water . . .	0·16 gram

Mix all together well.

Oil emulsions generally—*e.g.*, Emulsio Ol. Ricini—may be made in the same way as the acacia emulsion of cod-liver oil, but in the case of castor oil flavours which are also used in cooking should be avoided. Ol. menth. pip. is best for castor oil, and as the latter is only called for in draughts as required, the following method of making it can be recommended :— Into a 1½-oz. phial put aq. menth. pip. ʒij., spt. ammon. arom. ʒj., and ol. ricini ℥ss. Hold the phial in the palm of the hand for a few minutes to thin the oil, cork, and shake briskly until the mixture is uniformly white. Then add elixir saccharin. ɱv. and aq. menth. pip. ʒiij. Again mix. This draught, taken on an empty stomach, acts as an efficient purge for an adult.

Pancreatic Emulsion was devised in 1863 by Dr. Horace Dobell, who communicated his method of making it to the Royal Society in 1868. See the *Proceedings of the Royal Society*, No. 97 ; also an interesting essay by Dr. Dobell in *The Chemist and Druggist* of January 14, 1888, and paper by Mr. Richard V. Matison in the *American Journal of Pharmacy*, 1873, and the *Year-book of Pharmacy*, 1874, p. 364, where the working details are precisely and fully stated. The first stage in making the emulsion is to take 25 lbs. of clean fat-free pig's pancreas, chop it, and mix with 20 lbs. of lard, beating them well together, and gradually working in 3 gals.

of water. Squeeze the emulsion through a suitable cotton strainer. Then mix the strained liquid with three times its volume of ether, and allow to stand for two days, when the whole of the ether has separated and risen to the surface. Decant it and recover the ether by distillation. The residue is pancreatised fat. To make the emulsion, mix 2 parts of this fat with a mixture of rectified spirit 1 part and water 3 parts, and flavour with oil of cloves.

Petroleum Emulsion was introduced as a substitute for cod-liver oil and its preparations. It is made from a refined, neutral, inodorous, colourless, and tasteless liquid paraffin. The first formula was published in the *C. & D.* with acacia as the emulsifier. Recipes Nos. I. to III. below are for *Emulsio Petrolei c. Hypophosphitibus* :—

I

Paraffini liquidi, B.P.	℥xxiv.
Pulv. acaciæ	℥vj.
Pulv. tragacanth.	ʒij.
Tr. quillaiæ	ʒij.
Calcii hypophos.	ʒij.
Sodii hypophos.	ʒij.
Elixir glusidi	ʒss.
Ess. amygdal.	♏XLV.
Aquam ad	℥LX.

II

	Br.P.C.	B.P.C.
Liquid paraffin, B.P.	℥viij.	℥vj.
Powdered acacia	℥iv.	℥iij.
Powdered tragacanth	ʒij.	ʒij.
Oil of cinnamon	♏xxiv.	♏xx.

Mix in a mortar and add water ℥vj. ; emulsify and add

	Br.P.C.	B.P.C.
Sodium and calcium hypophosphites, of each	ʒiij. gr. xij.	℈viij.
Elixir of gluside	ʒij.	♏32
Water to	℥xxiv.	℥xx.

The A.Ph.F. is similar to the B.P.C. with slight differences in the quantities.

III. N.F.

This is without hypophosphites. It contains white petrolatum 50 grams, almond oil 250 grams, acacia 50 grams, tragacanth 25 grams, syrup 100 c.c., tincture of lemon 15 c.c., and water to 1,000 c.c.

Emulsio Petrolei cum Glycerophosphatibus, B.P.C., is the same as II. B.P.C. without the cinnamon oil and hypophosphites, and the following instead :—

Calcium glycerophosphate	℈iv.
Iron, magnesium, potassium, and sodium glycerophosphates	℈ij.
Glycerophosphoric acid (20 p.c.)	♏100
Spirit of chloroform	ʒss.
Tincture of lemon	♏200

Emulsio Santal. Flav. c. Cubeba et Buchu

Ol. santal. flav.	℥iij.
Pulv. tragac. co.	ʒij.
Ol. cubebæ	ʒiss.
Tr. buchu	ʒiv.
Aquam ad	℥xcvj.

Cap. ʒss. ter die.

Emulsum Phosphaticum, N.F.

Cod-liver oil . .	250 c.c.
Glycerite of egg-yolk	165 grams
Diluted phosphoric acid . . .	50 c.c.
Oil of bitter almond .	1·5 c.c.
Jamaica rum . .	250 c.c.
Orange-flower water to	1,000 c.c.

Add the oil to the glycerite in small quantities, emulsifying thoroughly after each addition; then add the other ingredients in their order.

Emulsio Salicylica

Ol. amygdalæ. . .	℥ij.
Pulv. acaciæ . . .	℥j.
Aq. flor. aurantii . .	℥ij.

Fiat emulsio, et adde

Acidi salicylici . .	℥ij.
Aq. flor. aurantii . .	℥viss.
Syrupi	℥j.

Misce.

This formula is a typical one for the administration of many organic remedies which are sparingly soluble in water.

Ergotin (Bonjean's).—The method communicated to the French Academy of Sciences in 1843 is as follows:—'Exhaust powdered ergot with cold water by displacement; heat the liquor to boiling-point, and, if there is a coagulum of albumen, filter; evaporate the filtrate on a water-bath to syrupy consistence; to this add a large excess of alcohol in order to precipitate gummy matter; allow the mixture to stand until the flocculence subsides; decant the clear liquor and evaporate to the consistence of a soft extract.' A better product is obtained by adding 1 per cent. of B.P. acetic acid to the water used for exhausting the drug. The acid is dissipated on evaporation. For observations on the whole subject of ergot preparations, *see* the *C. & D.*, 1913, II., 184.

Esbach's Reagent

(Gawalowski's Modification)

Picric acid . .	10 grams
Citric acid . .	20 grams
Water . . .	500 c.c.

Dissolve and add

Alcohol (95-per-cent.)	350 c.c.
Water to . . .	1,000 c.c.

Mix.

ESSENTIÆ—ESSENCES

Composition Essence

Composition powder .	℥xvj.
Proof spirit . . .	℥xx.
Glycerine . . .	℥v.
Water	℥x.

Macerate for four days and press out the liquor. Mix the marc with a pint of water, and again press. Mix the liquors, and reserve. Boil the marc in half a gallon of water, containing potass. carb. ʒij., for ten minutes, and strain 2 pints; when cold add this decoction to the reserve with 3 oz. of rectified spirit and water to 80 oz. Filter.

Essentia Anisi, B.P. 1885

Oil of anise . .	1 fl. oz.
Rectified spirit .	4 fl. oz.

American Essence

(syn. *Indian Brandy, or Brandee*)

Spirit of nitre . . .	ʒiv.
Tincture of rhubarb .	ʒiv.
Simple syrup . . .	ʒj.

Small shopkeepers sell such a preparation as the following:—

Spirit of nitrous ether .	ʒij.
Spirit of chloroform .	ʒj.
Water	ʒiv.
Caramel . . .	a sufficiency
Simple syrup to . .	Oj.

The sale of the latter article without a sweets-licence is illegal.

Cambrian Essence

(syn. *Essence of Smoke; Westphalian Essence*)

Rectified spirit of tar .	ʒij.
Wood naphtha . .	ʒiv.

Mix and add to

Crude pyroligneous acid .	ʒxx.

Shake and filter through a filter wetted with the acid. Colour with caramel.

NOTE.—Should be sent out clear.

Essentia Episcopalis

(syn. *Bischof-Essenz*)

Tincture of fresh orange-peel	ʒvij.
Cherry-laurel water .	ɱlxxx.
Tincture of cinnamon .	ɱlxxx.
Orange-flower water .	ʒx.
Rectified spirit to . .	ʒxxviij.

Allow to stand for a few days, and filter.

To make 'Bishop's Drink' a teaspoonful of this is added to a quart of water in which about 4 oz. of sugar has been dissolved. Originally the Bishop's drink was made with red wine and the Cardinal's with white. Bischof-Extrakt is 1 part of essence to 9 parts of syrup (by weight).

Kronen Essenz

(*Crown Essence*)

Rad. angelicæ .	1,500 grams
Rad. zedoariæ .	1,500 grams
Rad. tormentillæ.	1,000 grams
Rad. diptamin. .	1,000 grams
Herb. cardui benedict. . .	3,000 grams
Succi glycyrrhiz. .	6,000 grams
Camphor. . .	500 grams
Aloes . . .	6,000 grams
Theriac. venet. .	1,500 grams
Rad. gentianæ .	1,000 grams
Agaric. alb. .	750 grams
Myrrh. . .	2,000 grams
Spt. rectificat. .	200 kilos.

Macerate for fourteen days and filter.

Essentia Menthæ Piperitæ, B.P. 1885

Oil of peppermint .	1 fl. oz.
Rectified spirit .	4 fl. oz.

Mix.

NOTE.—An inquiry by the *C. & D.* early in 1905 elicited the fact that the majority of retail chemists sell as 'essence of peppermint' a 1-to-7 preparation, almost as many giving spt. menthæ piperitæ, B.P. 1898 (1 in 10).

Essentia Pepsini, C.F.

(syn. *Elixir of Pepsin*)

Glycerine of pepsin, B.P.	ʒiv.
Sherry	ʒv.
Glycerine . . .	ʒv.
Alcohol (95-per-cent.) .	ʒiiiss.
Tincture of fresh sweet-orange peel . .	ʒv.
Distilled water to . .	ʒxl.

Mix and filter through paper sprinkled with talc.

Compare with Elixir Pepsini.

Essence of Malt and Pepsin

A mixture of essence of pepsin 12 oz. with extract of malt 6 oz. and proof spirit 2 oz.

Ess. Sennæ Dulc. Conc.

Fol. sennæ alex. parv.	℥xx.
Aq. bullientis	Oiij.

Infuse one hour and strain, then concentrate to ℥xiv. and add

Theriacæ	lb. ss.
Tr. zingib.	℥iiss.
Aquam ad	℥xx.

Set aside for several days, then pour off the clear liquor.

Dose: Adults, a dessertspoonful; children from four to six years of age, a teaspoonful, and more or less in proportion to age.

Essentia Sinapis

(Similar to *Whitehead's Essence of Mustard*)

Camphor.	℥ij.
Ol. rosmarini	ʒij.
Ol. sinapis essent.	ʒj.
Pastæ bixæ	ʒj.
Ol. terebinthin. ad	℥x.

Rub down the annatto with a little of the turpentine, add to the rest of the ingredients, and filter.

Essentia Tamarindi Co.

Purified tamarind pulp.	℥x.
Alexandrian senna (deprived of resin with spirit)	℥iss.
Boiling water	Oiij.

Infuse for twelve hours and strain. Evaporate the strained liquor to 22 oz. (by weight). Take 14 oz. of the residue and neutralise with soda solution; then add

Rectified spirit	℥iv.
Syrup	℥ij.
Essence of vanilla	ʒiss.

Add the rest of the liquor, set aside for about a week, decant the clear and filter the 'foots.'

Dose: A teaspoonful or more, according to age and effect.

NOTE.—Ess. tamar. co. is a pleasant aperient syrup for children and others. Essentia tamarindorum, D.A.V., is made as follows:—Treat 500 parts of tamarinds with 2,500 parts of water, and after standing a few hours strain through a hair sieve, without pressure, 1,000 parts. Neutralise with 3 or 4 parts of magnesium carbonate. Separately infuse 50 parts of Alexandrian senna and 2 parts of calcined magnesia in 500 parts of water for twenty-four hours. Strain without pressure, mix with the tamarind liquor, and evaporate to 800 parts (by weight). When cold add 50 parts each of simple syrup, syrup of orange, syrup of cinnamon, and proof spirit (all by weight). Filter.

Essence of Witch Hazel

(syn. *Liquor Hamamelidis; Solution of Hamamelis, B.P.; Witch-hazel Extract; Aqua Hamamelidis Spirituosa, N.F.*)

A distillate from a maceration of the fresh twigs and leaves of *Hamamelis virginiana*, to which 3 per cent. of alcohol is added immediately after distillation, and another 9 per cent. a month later. Should be perfectly bright and free from decomposition-products. The British Pharmacopœia prescribes 50 oz. of fresh hamamelis-leaves, water 100 fl. oz., and alcohol 10 fl. oz. Macerate in a still for twenty-four hours, then distil one-half. The 'National Formulary,' however, directs 10 parts of shoots and twigs, 20 parts of water, and 1½ part of rectified spirit to be macerated for a day, and 10 parts of the maceration to be distilled. The essence is made in certain suitable districts of the United States. Pond's Extract, hazeline, and other similar preparations are distillates of fresh witch hazel.

Essence of Linseed, Compound (Kay's).—This is the subject of British letters patent (A.D. 1873 No. 1975) granted to Samuel Kay and Thomas Kay, of Stockport, who stated in their complete specification that they 'make an improved medicinal compound which contains concentrated within it fluid extract of senega, scilla, papaver, marrubium, chiretta, or other tonic bitter, and we add ipecacuanha, or antimonii tartras, or both, in wine, in the approved officinal proportions; we emulsify the clear liquid with linseed, "linum usitatissimum," by decoction in steam-jacketed pans or otherwise. The strained product is then further medicated with a distillate of pimpinella, anisum, laurocerasus, tolinfera (*sic*) balsamum, storax, benzoin, æther sulphuricus et chloricus, with sufficient mucilage aided by powerful agitators to produce a complete and homogeneous mixture, which contains the demulcent properties of linseed, combined with the cordial, balsamic, soothing, strengthening, and expectorating properties of the above medicines in a portable and convenient form. We call this "Compound Essence of Linseed."'

EXTRACTA—EXTRACTS

It is impossible to give complete consideration to the manufacture of extracts and fluid extracts in this book; but we quote the American and English directions for percolation (the method generally followed in the manufacture of fluid extracts), and add some further particulars which will be useful in preparing any extract for which no formula exists.

English

Moisten the drug (20 oz.) with 8 fl. oz. of the menstruum, pack it tightly in a percolator, and pour on sufficient menstruum to saturate the powder and leave a stratum above it. When the liquid begins to drop, close the lower orifice and macerate for twenty-four hours; then allow percolation to proceed, gradually adding menstruum until the drug is exhausted. Reserve the first 17 fl. oz. of the percolate, distil off the spirit from the remainder, and evaporate the residue to a soft extract; dissolve this in the reserved portion, and add enough menstruum to make the liquid extract measure 1 pint.

NOTE.—By adopting the process of repercolation evaporation of the second portion may be avoided.

American

Moisten the drug (100 grams) with 35 c.c. of the menstruum, pack it firmly in a cylindrical percolator, and pour on the remainder (40 c.c.) of the menstruum. When the liquid begins to drop from the percolator, close the lower orifice, and having closely covered the percolator macerate for twenty-four hours. Then allow the percolation to proceed, and when the liquid in the percolator has disappeared from the surface, gradually pour on more menstruum and continue the percolation until the drug is exhausted. Reserve the first 75 c.c. of the percolate, and evaporate the remainder to a soft extract; dissolve this in the reserved portion, and add enough of the menstruum to make the fluid extract measure 100 c.c.

If there is glycerine in the menstruum, it must be put in the first portion used. The following observations on the preparation of fluid extracts are by Messrs. Parke, Davis & Co. :—

We have studied carefully the several processes which have been hitherto employed for making fluid extracts, and, as might be expected, we find that no one process is to be recommended to the exclusion of all others. The most efficient means of completely exhausting a drug, with a minimum of menstruum, is unquestionably the process of percolation. In making a fluid extract, however, we do not seek to dissolve out of it everything soluble, but rather to extract the active constituents, and we aim to load our product as little as possible with inert matter. The process which we find to give, on the whole, the most satisfactory results with most drugs, is a modification of that described several years ago by Mr. N. Spencer Thomas (*American Journal of Pharmacy*). The drug, in powder of suitable fineness, is moistened with the menstruum and macerated in a closed container ten to twenty-four days. It is then subjected to pressure in a powerful hydraulic press. The residue is again moistened with fresh menstruum, macerated twenty-four hours, and expressed again; the operation may be repeated a third time, if necessary, to make up the required yield and thoroughly exhaust the drug. The expressed fluids constitute the fluid extract.

Our observation has been that in a large class of drugs, if the menstrua be judiciously chosen, the first and second pressings extract nearly all the active constituents of the drug, and further treatment of the residue is not desirable. It is better to use a small excess of the drug and reject the last portions of the active principle than to include in the fluid the inert material, only sparingly soluble in the menstruum, which complete exhaustion of the drug would add to it. The presence of this inert matter must increase the danger of precipitation in the fluid, and a precipitation, even of inert matter, is to be deprecated, since it gives the preparation an unsightly appearance.

In some drugs the active principles are more difficult of solution in any menstruum we can employ than the inert constituents of the drug. In such cases a more efficient mode of exhaustion becomes necessary. One method we employ for these refractory drugs is similar to that just described, but the maceration and expression are repeated until the drug

is exhausted. The first portion of fluid obtained is reserved as fluid extract, while the weak fluid is carried over to be used in a subsequent operation in moistening fresh drug.

In a large class of drugs, where the active principle is very readily taken up by the menstruum, we find advantage in combining percolation with expression. The drug, in tolerably fine powder, is moistened with the menstruum, packed in a percolator, and allowed to macerate three or four days. Percolation is then proceeded with very slowly, until sufficient menstruum has been added to make up the required yield. When the fluid ceases to drop, the contents of the percolator are removed and pressed out, the pressings united with the percolate forming the fluid extract. In the case of drugs more difficult of exhaustion, the percolation is carried further, so as to obtain the full yield of fluid extract; the contents of the percolator are then pressed out, and, if not sufficiently exhausted, remacerated with fresh menstruum and pressed again, the fluids obtained being reserved to be employed in the next operation to moisten fresh drug.

The U.S.P. process of exhausting the drug by percolation, reserving the first portion of the percolate, evaporating the remainder, and dissolving the residue in the fluid first obtained, is open to several objections. When a weak percolate from any drug is evaporated nearly to dryness, it is almost always observed that it will not dissolve again completely in the same menstruum, or if it redissolve in a small quantity of the menstruum, it throws down a precipitate on adding more of the same fluid. It will therefore generally happen that fluid extracts prepared by the U.S.P. method continue to precipitate for some time after they are made. As a rule, the portion of fluid which is subjected to evaporation contains not more than 5 to 10 per cent. of the entire active constituents of the drug, while not infrequently the proportion of inert extractive is as high as 20 to 25 per cent. of the whole. The appearance of strength, therefore, in extracts prepared by this method is delusive. The influence of heat is so frequently prejudicial to the activity of a drug that the official process is not to be recommended except in the hands of a watchful operator; it is not adapted for general use in a large manufacturing establishment.

Some drugs are best exhausted with water, the aqueous extract obtained by percolation being rapidly evaporated to a small volume, and alcohol then added in sufficient amount to preserve the solution. In a few cases glycerine is preferred to alcohol as the preserving-agent, as in fluid extract of golden seal (aqueous). Finally, there are some refractory drugs which cannot be satisfactorily exhausted by any process except that of repercolation as described by Dr. Squibb. The method may be advantageously employed in cases of such drugs as nux vomica and Calabar bean, which yield very little extractive to the menstruum employed.

In the choice of the best menstruum several things must be taken into consideration. It is, first of all, essential that the menstruum be one which will extract readily and completely the active constituents of the drug. In the case of a new drug, it is necessary to institute experiments—first, to determine, if possible, what is the nature of the active principle; and, secondly, to ascertain the practical behaviour of the drug towards solvents. When the active principle is an oleo-resin, a resin, a volatile

oil, or a camphor, the menstruum must of course contain a large proportion of alcohol. The use of strong spirit is, however, to be avoided, unless it is absolutely required to take up the active principle of the drug, especially if the dose of the fluid is large. The more alcohol the menstruum contains, the less likely it is to become overloaded with inert matters, and the less prone, consequently, to precipitation on standing. On the other hand, the more alcohol a fluid extract contains, the more likely it will be to produce unsightly resinous precipitates when mixed with syrups or other aqueous fluids. It is desirable, therefore, to keep the alcoholic strength as near that of proof spirit as the circumstances will permit. A few drugs contain, as their most important constituent, a mucilaginous principle, which is insoluble even in dilute alcohol. In such cases a weaker menstruum must be employed. Glycerine may sometimes be advantageously added to the menstruum, especially in the case of those astringent drugs whose tinctures show a disposition to gelatinise. The solvent power of glycerine, however, coincides nearly with that of water, so that the range of its use is very limited. It dissolves colouring-matters very freely, and gives to the fluid a certain body which suggests the idea of strength; hence it is largely employed by some manufacturers, who point to the fine colour and great density of their goods as evidence of their superiority. Colour is, of course, no criterion of strength. The active principles of most drugs, when pure, are colourless.

In the following table we give the briefest details of fluid extracts not in the British Pharmacopœia. An asterisk indicates those which are included in the B.P.C. : –

Table of Menstrua for Fluid Extracts (1 *in* 1)

Names of Drugs	S = Rectified Spirit W = Water G = Glycerine
Adonis vernalis	S entirely.
*Aletris farinosa	S 1. W 1.
Angelicæ radicis	S 3. W 2.
*Anthemis	70 p.c. alcohol.
Apium graveolens	S 2. W 1.
Apocynum cannabinum	S 13. W 5. G 2.
Aralia racemosa	S 2. W 1.
*Arnicæ	S 3. W 1.
Arnicæ flor.	S 2. W 1.
Asclepias tuberosa	S 4. W 5.
Aspidosperma quebracho	S 1. W 1.
Aurantii, U.S.P.	S 2. W 1.
Belæ	S 1. W 5.
Belladonnæ fol.	S 2. W 1.
Belladonnæ rad.	S 7. W 1.
Berberis vulgaris	S 3. W 2.
Boldo (Peumus boldus)	S 2. W 1.
*Buchu [B.P.C. alcohol only]	S 3. W 1.

Names of Drugs	S = Rectified Spirit W = Water G = Glycerine
Calamus, U.S.P.	S 3. W 1.
Calendula flor.	S 2. W 1.
Camellia Thea	S 12. W 4. 1.
Cannabis indica	S entirely.
*Capsicum (2 in 1)	S entirely.
Capsicum, U.S.P.	S entirely.
Cascara sagrada	S 1. W 4.
Castanea vesca	S 1. W 2.
*Caulophyllum thalictroides	S 2. W 1.
Chimaphila, U.S.P.	S 1. W 1.
Chirata, U.S.P.	S 1. W 1.
Coffea	S 2. W 3.
Collinsonia canadensis	S 4. W 5.
*Condurango	S 2. W 1.
*Conii, Br.P.C. (with acetic acid 1¼ p.c.)	S 2. W 1.
*Convallaria majalis	S 2. W 1.
Coptis trifolia	S 1. W 2.
Cornus circinata	S 1. W 1.
Cornus florida	S 1. W 1.
Corydalis radicis	S 3. W 1.
*Coto	S 9. W 1.
*Cubebæ, U.S.P.	S entirely.
*Damiana (Fluidext. turneræ, N.F.)	S 2. W 1.
Digitalis	S 2. W 1.
*Ergotæ ammon.	liq. am. 1, alc. 60p.c. 9
Eriodictyon californicum	S 3. W 1.
*Eucalyptus gum, Br.P.C. (1 in 5), B.P.C. (1 in 4)	S 2. W to 20.
Euonymus	S 1. W 1.
Eupatorium perfoliatum	S 1. W 1.
Filicis rhizoma	Ether.
*Fucus vesiculosus, Br.P.C.	S 1. W 1.
*Gelsemium, U.S.P.	S entirely
Geranium maculatum	S 6. W 3. G 1.
Glycyrrhizæ radicis	W (q.s.) S 25 p.c.
Gossypium herbaceum	S 3. G 1.
Guarana	S 3. W 1.
*Hæmatoxylon Campechianum, Br.P.C.	W by decoction, and S 15 p.c.
Helianthemum	S 1. W 1.
Humulus Lupulus	S 5. W 2.
Hydrangea arborescens	S 3. W 2.
Hyoscyami fol.	S 2. W 1.
Iris versicolor	S 3. W 4.
Jalapæ	S.
Jambul (Eugenia Jambolana)	S 1. W 1.
Juglans cinerea (leaves or nuts)	S 1. W 1.
Juniperi bacc.	S 1. W 1.
Kava	S 3. W 2.
*Kola, Br.P.C. (B.P.C. alc. 60 p.c.)	S 1. W 1.

Names of Drugs	S=Rectified Spirit W=Water G=Glycerine
*Krameriæ radicis	S 9. W 10. G 1.
Lactucarium	S, W, and ether.
Lappa officinalis	S 1. W 1.
Leptandra virginica	S 3. W 1.
Lobelia, U.S.P.	Ac. acet. 1. W 3.
*Maidis stigmata (Fluidext. zeæ, N.F.)	S 1. W 1.
*Maticæ, U.S.P. [B.P.C. alc. 70 p.c.]	S 3. W 1.
Menyanthes trifoliata	S 1. W 1.
Mezerei corticis	S.
*Papaveris caps. [process for B.P. 1885 Syrup]	W decoct. and S.
Petroselini radicis	S 1. W 1.
Phytolacca decandra	S 4. W 5.
Pichi	S 1. W 1.
*Pinus canadensis	alc. 45 p.c.
*Piscidia erythrina	S 2. W 1.
*Prunus virginiana (B.P.C. alc. 20 p.c. 5, G 1)	S 3. W 6. G 1.
*Pulsatilla	S 2. 1
*Quassiæ	S 1. W 2.
*Quillaiæ corticis	S 1. W 1.
*Rhamnus frangula, U.S.P.	S 5. W 8.
*Rhei radicis	60 p.c. alcohol.
Rhus aromatica	S 1. W 1.
Rhus glabra	S 4. W 5. G 1
Rosæ petal., U.S.P. [B.P.C. acid. sulph. dil. 4 p.c.]	S 6. W 4. G 1.
Rumex crispus	S 1. W 1.
*Salix nigra	S 2. W 1.
Sanguinaria canadensis (U.S.P. menstruum is acetic acid 3, water 7)	S 1. W 1.
*Scilla	70 p.c. alcohol.
Scoparius	S 2. W 1.
Scopola carniolica	S 4. W 1.
*Senega (sol. potash 3 p.c.)	70 p.c. alcohol.
*Senna legumin., Br.P.C.	S 1. W 2.
Spigelia Anthelmia	S 1. W 2.
Stillingia sylvatica	S 2. W 1.
Thuja occidentalis	S 2. W 1.
Thymi	S 1. W 4
Trillium erectum	S 3. W 2.
Tritici (couch-grass)	S 1. W 5.
Urtica dioica	S 1. W 1.
Ustilago Maidis	S 1. W 1.
*Valerian	70 p.c. alcohol.
Veratrum viride	S only.
Verbascum Thapsus	S 1. W 1.
Verbena hastata	S 1. W 1.
*Viburnum prunifolium (B.P.C. alc. 70 p.c.)	S 2. W 1.
Vinca major	S 1. W 1.
Xanthoxylum fraxineum	S entirely,
Yerba santa	S 4. W 1.

Ext. Bellad. Exsicc., B.P.C.

Exhaust 16 oz. of No. 40 powder belladonna-leaf by percolation with 70-per-cent. alcohol, making 64 oz. of percolate. Assay for dry extract and alkaloid; evaporate, adding enough powdered belladonna-leaves of known alkaloidal value to make the finished product contain 1 per cent. of alkaloid. Reduce the extract to No. 20 powder.

Ext. Belladonnæ Fol. Alcohol., Br.P.C.

A solid extract made by exhausting belladonna-leaf, in No. 60 powder, with rectified spirit, by percolation, recovering the spirit by distillation, and evaporating the residue over a water-bath to the consistence of an extract.

Ext. Cascaræ Sagradæ Arom. Fluid., C.F.

Cascara sagrada	80	oz.
Liquorice-root	10	oz.
Calcined magnesia	12	oz.
Gluside	40	gr.
Sodium bicarbonate	10	gr.
Oil of coriander	15	min.
Oil of anise	20	min.
Alcohol (95-per-cent.)	1	oz.
Glycerine	20	oz.
Distilled water(boiling)	100	oz.

Mix the cascara, liquorice, and magnesia thoroughly, and moisten thoroughly with the water, stirring well. Place the mixture in a suitable, well-covered container, and macerate for twenty-four hours, then pack moderately tight in a percolator, and percolate with boiling water till exhausted. Evaporate the percolate over a water-bath (or steam-bath) until it measures 54 fl. oz. Dissolve the gluside in 1 fl. oz. of water with the aid of the sodium bicarbonate. Dissolve the oils in the alcohol and mix both solutions with the glycerine, then add the concentrated percolate and shake thoroughly.

This process is like *Fuidext. Rhamni Pursh. Aromat.*, U.S.P., where the ingredients are: Cascara sag. 1,000, liquorice 100, magnesia 125, glycerine 250, comp. spt. of orange 10, alcohol 500. The solids are mixed with 2,000 of water and after twelve hours' maceration dried, then percolated with the glycerine alcohol, and 250 of water, percolation to 800 being finished with diluted alcohol; then continuing percolation with diluted alcohol, and proceeding in the usual manner to make 1,000 of fluid extract. Dose: 15 minims.

Ext. Cascar. Sagrad. Liquidum
Miscible or Tasteless

(The late John Moss's Process)

Cascara sagrada, one year old, in No. 20 powder	℥xvj.	
Rectified spirit	℥iv.	
Distilled water	a sufficiency	

Exhaust the bark with water by percolation; evaporate the percolate to the consistency of a brittle extract, which, when cold, treat with cold water until thoroughly disintegrated. Allow this to stand and settle. Strain through flannel and evaporate the strained liquor to 12 fl. oz. Add the rectified spirit when cold. Sp. gr. (at 60° F.) 1·050.

By the Br.P.C. process: Mix 20 oz. of coarsely powdered bark and 2 oz. of calcined magnesia into a thin paste with water. Dry and powder. Percolate with 60-per-cent. alcohol to 17 oz., which reserve. Continue percolation to exhaustion, evaporate this to 3 oz., and mix with the 17 oz. Filter.

Mr. E. White's process is to heat 20 oz. of the liquid extract with 1 oz. of ammonia or potash solution on a water-bath for three hours, or until the bitterness disappears then replace the alcohol evaporated. *Ext. Cascaræ Liq.*

Miscibile, B.P.C., is made by percolating 20 oz. of No. 20 cascara with water to exhaustion, adding liq. potass. 3 oz. 96 min. to the percolate, and evaporating to 16 oz., then adding glycerine 4 oz. and water to 20 oz.

Removal of bitter principle from cascara by magnesia, lime, or soda gives a product of diminished laxative power (*C. & D.*, 1904, II., 498, 509). If the tasteless extract is kept sufficiently long, it becomes inert as a purgative. (See also Mr. R. C. Cowley's observations, *C. & D.* 1911, II., 115.)

Extract. Cinchonæ Liq. (De Vrij)

Red cinchona-bark	100 parts
Normal hydrochloric acid	38 parts
Glycerine	20 parts
Water	362 parts

Macerate the bark in the acid and water for twelve hours, then add the glycerine and transfer to a percolator. When percolation ceases continue it with water to exhaustion and evaporate the percolate to 100 parts.

Ext. Cocæ Liq. Miscibile, B.P.C.

Evaporate 20 oz. of ext. cocæ liq. to 10 oz., pour off the clear liquid, and wash the residue with 2 oz. of water. Mix the washings with the clear liquid and add 60-per-cent. alcohol to make 20 oz.

Extractum Ergotæ Dialysatum
(*Dialysed Ergotin*)

Oil-free ergot in powder	5 parts
Distilled water	15 parts

Macerate for twenty-four hours, stirring occasionally; strain through a percolator and continue percolation with water until the fluid comes through almost colourless. Strain the whole of the liquid through twill and evaporate to 6 parts. Transfer this to a dialyser and continue the dialysis until no more passes through the membrane. Evaporate the liquid which has passed through the membrane on a water-bath to a thin extract.

Ext. Gavelles

This is an ingredient in Russell's prescription for the cure of obesity. The writer of the prescription says it is 'a preparation of marshmallow.'

Ext. Grindeliæ Liquidum
(J. E. Morrison)

Grindelia (No. 40)	20 oz.
Sodium carbonate	2 oz.
Water	10 oz.
Alcohol (80-per-cent.)	a s fficiency

Exhaust the drug by percolation with the alcohol; evaporate the percolate to extract consistency, dissolve in the water containing the carbonate, and when effervescence ceases add sufficient alcohol to make 20 oz.

Dose: 10 to 20 minims.

Ext. Ipecac. Liq. Miscibile
(F. C. J. Bird)

Made from the B.P. liquid extract by mixing with its own volume of distilled water, and after twenty-four hours filtering. The filtrate is distilled (the alcoholic portion being reserved), and the residue evaporated, further cleared, added to the distillate, and made up to the original volume taken.

The B.P.C. acidifies the filtrate with acetic acid, distils 52·5 per cent. (which is reserved), evaporates the residue to 42·5 per cent., allows to settle, and adds the clear liquor to the reserve; washes the dish with washings from the filter in the first process, adds these to the combined liquors, and evaporates the washings so as to make with the reserve 100 from that amount of drug.

Malt Extract and Cod-liver Oil is made on the large scale by simple admixture of the extract with the oil, preferably before the extract leaves the vacuum pan, as mixing must be effected at a temperature of about 100° F.—*i.e.*, when the extract is thin. On the small scale a mortar may be used, which should first be warmed well by filling with boiling water, the pestle also being warmed in the water; pour out, dry, put the extract in the mortar, stir to liquefy it, and proceed as stated below. The third formula provides an emulsion of the extract and oil. It is a pleasant preparation.

I

Ol. amygd. essent. . .	♏iij.
Ol. gaultheriæ . .	♏iij.
Ol. caryophyll. . .	♏ij.
Chloroformi . . .	♏v.
Ol. morrhuæ . . .	℥xx.

Mix and add a little at a time to

Ext. bynes . . .	lb. v.

placed in a large mortar heated as above stated. Stir assiduously while the oil is being incorporated, and do not add any more of the oil until the last added portion is incorporated.

II. D.A.V.

'Equal parts of malt extract and cod-liver oil should be slightly warmed and mixed.' Although the German rule is 'by weight,' the resulting product from equal weights is not at all good.

III

Powdered acacia . .	℥j.
Powdered tragacanth .	ʒj.
Glycerine . . .	℥iv
(or pancreatin glycerol ℥ij.)	

Mix in a large mortar. Take also

Malt extract . . .	℥xx.

Add about ℥iv. of this to the mixture in the mortar. Then mix

Cod-liver oil . . .	℥x
Saccharated solution of lime . . .	ʒj.

Incorporate about ℥iv. of this with the contents of the mortar. Then add more extract and more oil until the whole of both has been worked in. Flavour with

Essence of vanilla . .	♏x.
Essence of almonds (1 in 20)	♏xx.
Oil of cloves . . .	gtt. viij.

The late Mr. S. M. Burroughs demonstrated at the meeting of the British Pharmaceutical Conference in 1891 that malt extract is capable of taking up its own volume of castor oil by mixing as in the first method, the mixture showing no oil globules. Cod-liver oil is taken up almost to the same extent, but trade practice shows that 10 to 25 per cent. of the oil are common strengths. The Conference 'Formulary' recommended the preparation to be made by heating 17 fl. oz. of the extract to 110° F., pouring into a warm mortar, and gradually adding

3 oz. of cod-liver oil, constantly stirring. The B.P.C. uses the same formula for *Ext. Malti cum Oleo Morrhuæ*, incorporating without heat.

For medicating malt extract and malt and oil the following may be added to each 16 fl. oz. :—

Hypophosphites.—Solution of hypophosphites (for syrup), ʒj.
Pepsin.—Ac. hydrochlor., ʒj. ; aquæ, ʒj. ; pepsin. (Fairchild), gr. xxx. ; glycerinum ad ʒiv.
Iodide of Iron.—Solution of ferrous iodide (for syrup), ʒij.
Pancreatised.—Zymine (Fairchild), ʒss. ; sodii bicarb., ʒss. ; aq., ʒj. ; glycerin. ad ʒiv.
Phosphated.—Liq. ferri phos. co. pro syrup., ʒj.
Easton's.—Liq. ferri phos. c. quin. et strych. pro syrup., ʒss.
Hopped.—Tr. lupuli, B.P., ʒj.
Ferrated.—Sol. ferri pyrophosphat., ʒj.

Fletcher's liquors may be used in the foregoing formulas. On the manufacturing scale the medications are added to the malt wort before evaporation.

Ext. Pareiræ Liq.
(Lucas)

Pareira-root (No. 10 powder) 1 lb.
Alcohol (20-per-cent.) a sufficiency

Macerate in 10 oz. of the alcohol for twelve hours, press, and reserve. Repeat maceration twice with 4 oz. alcohol for four hours each time, pressing at the end. Allow to stand for twenty-four hours, and filter, adding 20-per-cent. alcohol to bring the specific gravity to 1·020.

Ext. Scillæ Liq. Acetic.
(Merson)

Exhaust 1 part of squill by repercolation with 33-per-cent. acetic acid until 2 parts of final percolate are obtained.

Ext. Senegæ Liquid.
(J. E. Morrison)

Senega (No. 40 powder) . ʒxx.
Solution of soda . . ʒivss.
Alcohol (70-per-cent.) a sufficiency

Mix the solution with 6 oz. of the alcohol, damp the powder with this, pack in a percolator and percolate with the alcohol to 17 oz. Reserve. Continue percolation with 70-per-cent. alcohol to exhaustion, evaporate to 3 oz., and add to the reserve.

The B.P.C. article is U.S.P., viz. : Senega 1,000 grams, potash solution 30 c.c., and a sufficiency of alcohol (2) and water (1) to make 1,000 c.c.

Extract. Sennæ Fluid. (Duncan).—In 1843 the late Professor Christison communicated the following to the *Pharmaceutical Journal*, stating that it was the fluid extract of senna devised by Mr. John Duncan :—

Take 15 lb. avoir. of Tinnevelly senna and exhaust it with boiling water by displacement. About four times its weight of water is sufficient. Concentrate the infusion *in vacuo* to 10 lb. ; dissolve in the product 6 lb. of treacle, previously concentrated over the vapour-bath till a little of it

becomes nearly dry on cooling; add 24 fl. oz. of rectified spirit (dens. ·835), and, if necessary, add water to make 15 (16 oz.) pints. . . . The dose is 2 dr. for an adult.

This note is, we believe, chiefly of historic interest, for, whatever Duncan's extract may have been originally, it no longer tastes of treacle. As a sweet essence of senna the elixir sennæ, Br.P.C., is all that can be desired. *See*, however, 'Ess. Sennæ Dulc. Conc.' on p. 616.

GARGARISMATA—GARGLES

Common Strengths

The following are the quantities of ingredients for each ounce of gargle, with or without 20 minims of glycerine :—

Acidi borici	℈j.
Acidi carbolici	♏xx.
Acidi sulphurosi	ʒss.
Acidi tannici	gr. x.
Aluminis	gr. xv.
Boracis	℈j.–ʒss.
Capsici tincturæ	ʒss.
Hydrargyri perchloridi	gr. ss.
Potassii chloratis	gr. x.
Potassii permanganatis	gr. ¼
Sodæ chlorinatæ liquoris	ʒss.–ʒj.
Zinci chloridi liquoris	♏j.–♏ij.

The B.P.C. strengths are with distilled water to 100: Glycer. ac. carbol., 5; acid. chromic., 0·2; glycer. ac. tannic., 10; alum., 2, et inf. rosæ acid., 98; boracis, 3·43. For some others *see* p. 628.

Gargarisma Acidi Tannici

Glycerini ac. tannici	ʒvj.
Glycerini puri	ʒss.
Inf. rosæ acid. conc.	ʒvj.
Spt. chloroformi	ʒiss.
Aq. ad	ʒviij.

Directions.—Half fill a wine-glass with the gargle, fill it up with warm water, mix, and gargle the throat with the mixture. Tr. capsici ♏iij. to ʒj. may be added.

Gargarisma Aluminis (Squire)

Broken rose-petals	ʒiij.
Dilute sulphuric acid	ʒiij.
Distilled water	ʒx.

Macerate two hours and strain 8 oz. To the liquor add

Alum	ʒij.
Sugar	ʒiv.
Rectified spirit	ʒiv.

Dissolve.

To be used with an equal bulk or water.

Astringent Gargle

Acidi tannici	ʒx.
Acidi borici	ʒx.
Glycerini	ʒx.
Liq. cocci	♏CLX.
Aq. rosæ trip.	ʒx.
Aquam ad	ʒlxxx.

Misce.

Gargarisma Boracis

Boracis	ʒiv.
Glycerini	ʒss.
Tr. myrrhæ	ʒss.
Aq. ad	ʒx.

Rub up the borax with the glycerine, add 6 oz. of water, transfer to a bottle, pour in the tincture of myrrh, shake, and make up.

Gargarisma Hydrargyri Perchloridi (Antisyphilitic)

Hydrarg. perchlor.	gr. iv
Acid. hydrochlor. dil.	♏xxiv.
Glycerini	ʒij.
Aq. ad	ʒvii

S. et M.

Gargarisma Potassii Chloratis

Potassii chloratis . .	ʒss.
Glycerini . . .	ʒj.
Aq. ad	ʒxij.

B.P.C. preparation of the same name is potass. chlorat. ℈x., ac. hydrochlor. dil. ♏100, aq. dest. ad ʒxx. Dissolve the salt in the water and add the acid.

Gargarisma Chlori

Pulv. potassii chlorat. .	ʒj.
Acid. hydrochloric. .	♏xvj.
Aq. destillat . .	ʒviij.

Put the chlorate in the bottle and pour the acid upon it. Cork the bottle after a minute or so, and let the chlorine be generated. Then add the water gradually, shaking after each addition. Half an ounce of glycerine may be added.

C.F. is pot. chlorat. gr. x., ac. hydrochlor. ʒss., aq. dest. ad ʒxx.

B.P.C. is pot. chlorat. ℈x., ac. hydrochlor. ♏XL., aq. dest. ad ʒxx. Methods as above.

Gargarisma Myrrhæ [B.P.C.]

Tr. myrrhæ . . .	ʒss.
Mellis	ʒss.
Inf. rosæ acid. ad . .	ʒx.

Gargarisma Potassii Permanganatis [B.P.C.]

Liq. potass. permang. .	ʒij.
Aq. ad	ʒx.
M.	

Gelanthum

(Unna)

Tragacanth . . .	ʒiiss.
Gelatin	ʒij.
Glycerine . . .	ʒvj.
Thymol	gr. ¼
Distilled water .	a sufficiency

Put the tragacanth and gelatin in a covered jar with water 10 oz. Place in a steam-bath for twenty-four hours; press the paste through muslin, mix, add the glycerine, heat on a water-bath for an hour, and make up to 12 oz. with water in which the thymol is dissolved.

Better with tragacanth 110 gr. and powdered acacia 30 gr.

GELATINES AND JELLIES

Gelatum Acidi Acetici

(Unna)

Gelatin	ʒj.
Distilled water . .	ʒiiiss.
Glycerine . . .	ʒv.
Glacial acetic acid . .	ʒss.

All by weight. Soak the gelatin in the water; when soft add the glycerine, dissolve by the heat of a water-bath, and add the acid. Mix.

Gelato-glycerinum

(Throat Hospital Pharmacopœia)

Refined gelatin . .	ʒv.
Glycerine . . .	ʒvj.
Water	ʒvj.

All by weight. Soak the gelatin in the water for twelve hours, stirring occasionally; add the glycerine, dissolve on a water-bath, and reduce the weight by evaporation to 15 oz.

[B.P.C. has the same proportions—viz., gelatin 32·5, glycerin 40, and water 40—and evaporates to 100 by weight, but does not prescribe the liquids by weight.]

Used as a basis for nasal bougies, each containing 40 gr. of this mass and the following medicaments:—

Bugin. Acid. Carbol.—Acid. carbolic. gr. ss.

Bugin. Bismuthi.—Bism. subnit. gr. v., glycerin. ♏iij.

Bugin. Cupri Sulph. — Cupri sulph. gr. 1/16.

Bugin. Iodoform. — Iodoform. gr. ss., glycerin. ♏j.

Bugin. Morphinæ. — Morph. acet. gr. $\frac{1}{10}$.

Bugin. Pini Sylvest.—Ol. pini sylvest. ♏ss.

Bugin. Plumbi Acet.—Plumbi acet. gr. ss.

Bugin. Thymol.—Thymol. gr. $\frac{1}{10}$, S.V.R. ♏ss.

Bugin. Zinci Sulph. — Zinc. Sulphat. gr. $\frac{1}{10}$.

Gelato-glycerine

(Squire's Basis for Suppositories and Pessaries)

Gelatin	ʒj.
Water	ʒj.
Glycerine	ʒiiiss.

Soak the gelatin in the water until it is absorbed, then add the glycerine, and dissolve by the heat of a water-bath.

Gelatum Acidi Salicylici

(Unna)

	5 p.c.	10 p.c.	20 p.c.
Gelatin	ʒj.	ʒj.	ʒj.
Glycerine	ʒiv.	ʒivss.	ʒv.
Water	ʒivss.	ʒiv.	ʒij.
Salicylic acid	ʒss.	ʒj.	ʒij.

All by weight. Proceed as for gelat. ac. acetic., but reserve a sufficiency of the glycerine to make the acid a thin paste, which dissolve in the warm mass.

Gelatum Chrysarobini

(Unna)

Gelatin	ʒss.
Water	ʒv.
Glycerine	ʒix.

All by weight. Proceed in the usual way, and evaporate to 9½ oz., then add

Chrysarobin, in fine powder ʒss.

Mix well.

Gelatum Carrageen, Ph.G.

Irish moss	ʒj.
Sugar	ʒij.
Water	ʒxl.

Heat the Irish moss in the water for half an hour on a water-bath, strain, add the sugar, and evaporate to 20 oz.

Gelatinum Chondri, N.F., is made by dissolving 1 part of the moss in 50 parts of water, straining, and evaporating until the gelatin can be detached from the dish in scales.

Gelatum Codeinæ et Glycerini

(Hardwick)

Codeine	gr. lxxij.
Citric acid	ʒxij.
Gelatin	ʒvj.
Glycerine	ʒxxxvj.
Oil of lemon	ʒj.
Toluinated water	ʒxxx.

The water is made by boiling 2½ oz. of tolu balsam in 40 oz. of water for half an hour, then straining, and making up to 32 oz. if necessary. In 25 oz. of the water soak the gelatin until soft, then add the glycerine, heat on a water-bath until dissolved, and skim. Separately dissolve the acid and codeine in 5 oz. of the water, add to the hot mass, and mix; finally add the oil, stir well, and pour into suitable bottles.

Dose: ʒj. for laryngitis and cough.

Gelatinum Codeinæ, B.P.C., is this with terpeneless lemon oil (3⅓ minims to the above quantity).

Gelatum Cocainæ

This remedy for sickness of pregnancy, &c., to be prepared in the same way as gelat. codeinæ, using cocaine hydrochloride gr. lxxij. and citric acid ʒiij., instead of codeine and the amount of acid stated in formula.

Gelatum Copaibæ

Thick copaiba	ʒviij.
Powdered sugar	ʒiv.
Clear honey	ʒiv.
Distilled water	ʒv.
Oil of peppermint	ʒj.

Roseine gr. $\frac{1}{10}$ dissolved in water mxx.

Mix the first four ingredients in a water-dish, heat gently, stirring all the time until the mixture boils; then continue to stir until a jelly is formed; cool somewhat, and add the peppermint and colouring.

This is a formula devised by Mr. Wm. Martindale in 1871. Another kind of copaiba jelly is made by melting 1 part of spermaceti in 5 parts of copaiba by heat. Still another is made with isinglass, but Mr. Martindale's is easiest made and most palatable. It contains 50 per cent. of copaiba, and may be taken in wafer paper.

Gelatum Ichthyol

(Unna)

Gelatin	ʒj.
Distilled water	ʒiiss.
Glycerine	ʒvj.
Ichthyol	ʒj.

All by weight. Proceed as for gel. chrysarobin.

Pasta Ichthamolis, B.P.C., is this made with ammonium ichthosulphonate. *Pasta Ichthamolis Co.*, B.P.C., is amm. ichth. 25, ac. carbol. 2·5, pulv. amyli 50, aq. fervid. 22·5; M.S.A.

Gelatum Iodoformi

(Unna)

	5 p.c.	10 p.c.
Gelatin	ʒss.	ʒss.
Water	ʒvij.	ʒviss.
Glycerine	ʒij.	ʒij.
Iodoform	ʒss.	ʒj.

All by weight. Proceed as for gelat. chrysarobin.

Gelatum Naphthol-beta

(Unna)

As 10-per-cent. gelat. iodoformi, but with beta-naphthol. ʒv.

Gelatum Olei Morrhuæ

Cod-liver oil	ʒv.
Russian isinglass	ʒij.
Water	ʒj.
Sugar	ʒiss.
Flavouring oils	mviij

Soak the isinglass in the water in a 1-lb. jelly-pot until soft. Add the oil, place the pot in a pan of water, heat, stirring all the time; when the isinglass is dissolved add the sugar, with which the oils have been well mixed; stir well until dissolved, and continue to stir as it cools and sets.

Gelatum Zinci

(*Unna's Zinc Paste; Zinkleim*)

	Common	Hard
Gelatin	ʒiij.	ʒiv.
Zinc oxide	ʒiij.	ʒiij.
Glycerin	ʒv.	ʒv.
Water	ʒix.	ʒix.

All by weight. M.S.A.

To the hard is added, when required, ʒj. of pix liquid., ext. cannabis ind., or resorcin.

To the common sulph. præcip. ʒj. or ichthyol. ʒss. to ʒj.

The Br.P.C. jelly was the common with zinc. ox. ʒij., glycerin. fl. ʒvss. *Pasta Zinci et Gelatini*, B.P.C., is gelatin. 15, aq. dest. 35, zinc. ox. 15, glycerin. 35. *Pasta Zinci et Ichthamolis*, B.P.C., is zinc. ox. 10, amm. ichth. 2, gelatin. 16, glycerin. 32, aq. dest. 40. (Solids by weight, liquids by measure.)

The mode of procedure for manufacturing these jellies of Unna's has been already sufficiently indicated; but as the zinc

paste is the most commonly used, a few remarks in regard to it will not be out of place, especially as the method of making it may be followed in respect to similar powder-containing preparations. After the gelatin has been softened by twice its weight of water, contained in a suitable pot or jar, place the container in a pan of hot water and add 3 oz. of glycerine (*i.e.*, for the above proportions), and stir until dissolved. Meanwhile have the zinc oxide well triturated with the rest of the glycerine and water, until it is smooth and free from grit; now transfer this to the pot, stirring well all the time, so that no local hardening of the gelatin may take place; finally, transfer to a container, if the paste is not to be kept in the jar, and cool quickly. This paste and similar pastes are used for treating certain skin-diseases, being liquefied immediately before use, and spread upon the surface while warm. The greatest care should be taken that they are smooth and homogeneous.

Glycelæum

Bitter almond cake (in powder)	℥iss.
Glycerine	℥ij.
Water	℥j.

Mix.

This mixture was proposed by Mr. T. B. Groves as an emulsifier of fats, in order to make oleo-aqueous ointment-bases. One part of glycelæum mixes readily with 2 parts of oil or fat by simply rubbing in a mortar. If for internal exhibition water may then be added. Ol. ricini does not mix with glycelæum.

GLYCERINA, GLYCERITA, VEL GLYCEROLA

Under these and other names many preparations are now popular in which the therapeutic influence of glycerine is secondary. Most Pharmacopœias include selections of such preparations. The glycerine is used in them because it is a good solvent, one of the best preservatives, and a remarkably stable and, at normal temperatures, non-volatile liquid. The subjoined selection includes the most popular American, Continental, and British formulas. We make no distinction between the names glycerine, glycerite, and glycerole, although 'glycerite' appears to us the happiest title for medicated glycerines.

Glycer. Acidi Borici

Boric acid (in powder) .	ʒj.
Glycerine sufficient to make	ʒv.

Mix and dissolve by the aid of heat.

The B.P.C. 1. preparation was that of the B.P., therefore differed constitutionally from the above.

Glycer. Acidi Hydriodici

(Wm. C. Kirchgessner)

Potassium iodide .	4,000 gr.
Potassium hypophosphite	304 gr.
Tartaric acid . .	3,696 gr.
Water	10 oz.
Proof spirit . . .	16 oz.
Glycerine, 50 per cent.	a sufficiency

Dissolve the potassium salts in the water. Dissolve the acid in the proof spirit. Mix the two solutions and pack in ice for three hours, shaking the bottle occasionally. Filter. Of the filtrate, 2 fl. oz. added to 14 fl. oz. of 50-per-cent. glycerine will make a 2-per-cent. glycerol.

Glycer. Acidi Tartarici

(syn. *Vidal's Glycerole*)

Pulv. acid. tart. .	. gr. xxij.
Glycer. amyli, B.P.	. ʒj.

M.

Glycer. Aloes

Pulv. aloes socot. .	. ʒj.
Glycerini . .	. ʒviij.

Rub the powdered aloes in a mortar with the glycerine, transfer to a bottle, and heat gently on a water-bath, shaking occasionally until dissolved; then strain.

Glycer. Aurantii

Tr. aurantii . .	. ʒj.
Glycerini . .	. ʒvij.

M.

A Margate substitute for syr. aurantii, B.P.

Glycer. Belladonnæ, Br.P.C.

Ext. belladonnæ viridis .	ʒj.
Aq. bullientis . .	. ʒj.
Glycerinum ad .	. ʒij.

Rub the extract in a warm mortar with the water to a smooth paste and add the glycerine.

B.P.C. and C.F. are the same.

Glycer. Bismuthi

Bismuth subnitrate.	1,142 gr.
Nitric acid . .	19 fl. dr.
Tartaric acid . .	1,720 gr.
Sodium bicarbonate	1,954 gr.
Glycerine . .	8 fl. oz.
Distilled water .	a sufficiency

Dilute the nitric acid with 10 dr. of water and dissolve the bismuth salt in it; slowly add 16 oz. of water. In the mixture dissolve 860 gr. of tartaric acid, then slowly add 977 gr. of the bicarbonate and make up to 32 oz. with water. Set aside overnight, then collect the magma on a filter, wash thoroughly, and drain. Now dissolve 977 gr. of the bicarbonate and 860 gr. of tartaric acid in 5 oz. of water, warming until clear; dissolve the bismuth precipitate in this, filter, add the glycerine, and make up to 16 oz. with water.

The foregoing is a slightly acid glycerite well adapted for making pepsin and bismuth preparations. The following is *Liquid Bismuth*, N.F. :—

Bismuth. ammon. cit. .	gr. 256
Alcohol. . .	. ʒiv.
Glycerin. . .	. ʒij.
Liquor. ammoniæ	. q.s.
Aquam ad . .	. ʒxxxij.

Dissolve the double citrate in the water, and if after standing it is not clear decant and dissolve the residue

with ammonia solution, filter, add the alcohol, glycerine, and water.

℥j. = 1 grain of the bismuth salt.

Glycer. Bismuthi Carbonatis

(E. White)

Bismuth oxynitrate .	60 grams
Nitric acid . .	40 c.c.
Water . . .	25 c.c.

Dissolve and pour into a solution containing

Ammonium carbonate	55 grams
Water . . .	300 c.c.

Collect the precipitate on a calico filter, wash well, drain, and rub the moist precipitate with sufficient glycerine to produce 100 c.c.

℥j. = bism. carb. ℥ss.

B.P.C.: Bismuth nitrate (crystals) 100, nitric acid 15, ammonium carbonate 50, water 360, glycerin to 100. Process and result the same.

Glycer. Bismuthi Nitratis

(Balmanno Squire)

Bismuthi nitratis . .	℥ss.
Aq. destillatæ . .	℥ij.
Glycerinum (Price) ad .	℥vj.

Mix the nitrate of bismuth (not subnitrate) with 2 dr. of glycerine diluted with the water; then add to the rest of the glycerine and mix well together.

Glycer. Boroglycerini, U.S.P.

Boric acid, in powder	310 grams
Glycerine to make	1,000 grams

Heat 460 grams of glycerine in a tared dish to 150° C. (302° F.) and add the boric acid in portions, constantly stirring. Continue to heat, stirring all the time, until the contents of the dish weigh 500 grams; then add 500 grams of glycerine and mix thoroughly.

This is a diluted imitation of Barff's Boroglyceride.

Glycer. Camphor-chloral

Chloral. hydratis . .	℥v.
Camphoræ . . .	℥iij.
Glycerini . . .	℥xxv.

All by weight. Rub the chloral and camphor together, and add the glycerine, heated to 50° C. Should be prepared as required, because the camphor crystallises out after it stands some time. Used as a skin-application.

(Pavesi's)

Flowers of camphor .	℥iiss.
Chloral hydrate . .	℥ij.
Oil of juniper . . .	℥j.
Glycerine . . .	℥j.
Rectified spirit . .	℥j.

Mix and dissolve.

Glycer. Carmini, Ext. Phar.

Carmini	℥j.
Liq. ammoniæ . .	♏c.
Glycerini . . .	℥vj.
Aq. dest. ad . . .	℥j.

Mix the carmine with 80 minims of the ammonia solution and 1 dr. of water, and dissolve. Add the glycerine gradually and heat on a water-bath till free from ammonia odour; when cold add the rest of the ammonia and water to 1 oz.

This was B.P.C. 1.; now it is: Carmin. 1¼ oz., pot. carb. 87½ gr., pot. cit. 2 oz., glycerin. 4 oz., aq. dest. ad 20 oz.

Glycer. Chloroformi

Chloroformi . . .	℥ss.
Spt. rectificat. . .	℥x.
Glycerinum ad . .	℥v.

Glycer. Croci (Squire)

[A.Ph.F. and B.P.C.]

Saffron	℥j.
Glycerine . . .	℥xx.
Proof spirit . . .	℥xx.

Digest the saffron in the mixed liquids for an hour at a gentle heat, then filter.

Superior to syr. croci. A.Ph.F. and B.P.C. have 60-per-cent. alcohol.

Glycer. Ferri Bromidi

Fine iron wire	gr. 385
Bromine	gr. 770
Distilled water	ʒiij.
Glycerine to	ʒxxvj.

Proceed as for glycer. ferri iod.

Adult dose: ʒj. = 5 gr. $FeBr_2$.

Glycer. Ferri Dialysati

Liq. ferri dialysat.	ʒj.
Glycerinum ad	ʒiij.

Dose: A teaspoonful.

Glycer. Ferri Iodidi

Fine iron wire	ʒj.
Iodine	ʒij.
Distilled water	ʒiij.
Glycerine	ʒxxvij.

Mix 2 oz. of glycerine and 2 oz. of water in a suitable flask, put in the iron wire and iodine, and promote chemical union by gentle heat. When the froth becomes white filter the solution into 24 oz. of glycerine, wash the flask and filter with 1 oz. of water, and make up to 31 oz. with glycerine.

Strength as syr. ferri iod., B.P.

Glycer. Heroinæ Co.,
(*Glycer. Acetomorphinæ, B.P.C.*)

Acetomorphine hydrochloride	gr. v.
Chloroform	♏xx.
Syrup of roses	ʒx.
Distilled water	ʒij.
Alcohol	♏xl.
Glycerine to	ʒxx.

Dissolve the acetomorphine salt in the water and add the syrup gradually, shaking after each addition. Dissolve the chloroform in the alcohol, add to the syrup; then add glycerine to 20 oz.

This formula for *Glycaphorm* appeared in the first edition of the 'Canadian Formulary,' but was replaced in subsequent editions by another, which is given in the Supplementary Chapter. The B.P.C. adopts above with hydrochloride 4½ gr., inf. rosæ acid. 1¼ oz., and simple syrup, 9 oz.

Glycerol Glycerophosphatis, B.F.

Cudbear	gr. xv
Distilled water	ʒx.

Boil for ten minutes, filter, and dissolve in the warm filtrate

Calcium glycerophosphate	℈viij.
Potassium glycerophosphate	℈iv.
Sodium glycerophosphate	℈iv.
Magnesium glycerophosphate	℈iv.
Iron glycerophosphate (in scales)	℈ij.
Citric acid	ʒss.

Then add

Glycerine	ʒx.
Chloroform	♏v.
Alcohol	♏xl.
Orange-flower water (triple)	ʒij.
Cherry-laurel water	ʒiij.

Dose: ʒj. to ʒij.

B.P.C. uses tincture of cudbear ʒv. instead of cudbear.

The above *cum medullâ rubrâ*: Use 10 oz. of glycerine extract of red bone-marrow in place of glycerine (B.F. and B.P.C.).

Glycer. Hydrargyri Perchloridi
(Vigier's)

Hydrarg. perchlorid.	ʒss.
Glycerini	ʒj.

Solve.

Used as an application for scabies, pediculi, &c., but is a convenient solution for making antiseptic lotions—ʒj. in aq. ʒvj. giving practically a 1-in-1,000 solution.

An equally convenient solution of perchloride of mercury containing 1 gr. in 10 minims, which keeps better than if made with pure glycerine, is the following:—

Hydrargyri perchlorid.	gr. 96

Put into a flask with

Glycerin.	ʒiss. (by weight)
Aquæ destillat.	ʒvj.

Boil gently until dissolved, cool, and make up to exactly 2 fl. oz. with distilled water.

Glycer. Hydrastis, U.S.P. and B.P.C.

Hydrastis (in fine powder)	ʒxvj.
Glycerine . . .	ʒviij.
Rectified spirit .	a sufficiency
Water to . . .	ʒxvj.

Moisten the hydrastis with 6 oz. of spirit, pack in a percolator, and exhaust with more spirit. Add 4 oz. of water to the percolate, recover the spirit, and make up the residue to 8 oz. with water. After twenty-four hours filter, washing the filter with water to 8 oz., and add the glycerine.

Glycer. Hypophosphitum

Liq. ferri hypophosphit. fort.	ʒiv.
Manganes. hypophosphit.	℈iv.
Calcii hypophosphit. .	℈viij.
Sodii hypophosphit. .	℈iv.
Acid. hypophos. (30 p.c.)	ʒss.
Glycerini . . .	ʒx.
Aq. destil. ad. . .	ʒxx.

Dissolve the hypophosphites in 5 oz. of water to which the acid has been added. To this add the liquor, the glycerine, and water to 20 oz. After a day filter.

This is the basis of *Glycer. Hypophosphitis*, B.F., which is devoid of the sodium salt, and contains quinine hypophosphite ℈iv. and strychnine hypophosphite gr. iiss. per pint, with half above quantity of acid. B.P.C. is like B.F.

Glycer. Iodi [B.P.C.]
(*Morton's Fluid; Injectio Iodi, B.P.C.*)

Iodine	gr. x.
Potassium iodide . .	ʒss.
Glycerine . . .	ʒj.

Put the iodine and iodide in a glazed porcelain mortar, triturate with about 20 minims of water, and slowly add the glycerine to make a perfect solution.

This is for injection in spina bifida. There are other iodine glycerines, varying in strength from 4 gr. to ʒj. of iodine per oz., with as much potassium iodide to promote solution.

C.F.

Iodine, resublimed . .	1 part
Glycerine . . .	50 parts

Dissolve the iodine in the glycerine with the aid of a gentle heat.

Pigmentum Mandl, T.H.P.

Iodine	gr. vj.
Potassium iodide . .	℈j.
Oil of peppermint . .	♏v.
Glycerine to . . .	ʒj.

Dissolve and mix.

Glycer. Iodoformi

Iodoformi . . .	ʒj.
Coumarini . . .	gr. ss.
Glycerinum ad . .	ʒj.

Triturate the powders together and add the glycerine.

Glycer. Ipecacuanhæ
(F. C. J. Bird)

Ext. ipecacuan. liq., Aquæ destillatæ .	aa. ʒx.

Mix, and after twenty-four hours filter, washing the filtrate with distilled water until colourless, reserving the washings, which evaporate separately. Acidify the first filtrate with acetic acid, and evaporate on a water-bath until, with the evaporated washings, the product is 5 oz. To this add glycerine 5 oz. and mix well.

B.P.C. is acet. ipecac. and glycerin. equal parts.

Glycer. Pepsin. Acid.

Soluble scale pepsin .	ʒv. ℈ij.
Dilute hydrochloric acid	ʒss.
Orange-flower water (conc.) . . .	ʒj.
Glycerine . . .	ʒx.
Distilled water to . .	ʒxx.

Mix the acid with 6 oz. of water and add the pepsin. Dissolve by gentle agitation and add the orange-

flower water; filter, add the glycerine, and make up to 20 oz. with water.

Glycer. Pepsin. Fort., B.P.C.: Pepsin. 15, ac. hydrochlor. dil. 5, glycerin. 50, elix. simp. 5, aq. dest. ad 100.

Glycer. Pepsin., N.F.

Pepsin in scales .	640 gr.
Hydrochloric acid	75 minims
Purified talc .	120 gr.
Glycerine . . .	8 fl. oz.
Water to . . .	16 fl. oz.

Mix the acid with 7 oz. of water, add the pepsin, and dissolve by shaking. Mix the talc with the solution and filter clear, washing the filter with water to 8 oz. To this add the glycerine, and mix.

Glycer. Papain. may be made in the same manner as the N.F. formula, but with 1 oz. of papain and acid. hydrochlor. ♏XL. to the 16 oz.

B.P.C. has papain 9·15, dilute hydrochloric acid 8·34, simple elixir 5, and glycerine to 100.

Glycer. Phosphori

See Elixir Phosphori and Liquor Phosphori.

Glycer. Picis Liquidæ, N.F.

Tar	1 troy oz.
Carbonate of magnesium	2 troy oz.
Glycerine . . .	4 fl. oz.
Alcohol (95-per-cent.) .	2 fl. oz.
Water to . . .	16 fl. oz.

Stir the tar in a mortar with 3 oz. of water, pour off the water, and repeat until the water comes off only feebly acid. Now triturate the washed tar with the spirit, add the magnesia, glycerine, and 10 oz. of water. Filter through a loose-texture paper supported by muslin and wash the filter with water to make the filtrate measure 16 oz.

Glycer. Saponatus

(Hebra)

Two strengths of this ointment-basis are made—viz., *Gly. Sapon. Mollis*, consisting of cocoanut-oil soap 8 parts and glycerine 92 parts (by weight), and *Gly. Sapon. Densior*, which contains 20 parts of the soap and 80 parts of glycerine. The soap in shavings is dissolved in the glycerine by heat. Subjoined are a few of the medications:—

Ac. salicylic. 5 per cent. c. G.S.D.

Do. c. creosoto aa. 5 per cent. c. G.S.D.

Iodoform 10 to 50 per cent. c. suitable mixtures to give proper consistency.

Resorcin. 5 per cent. c. G.S.D.

Sulph. præcip. 5 per cent. c. G.S.D.

Zinci oxid. 10 per cent. c. G.S.M.

The medicament is mixed with a portion of the glycerine and added to the soap solution.

Glycer. Sodii Cinnamatis

(Marsden and B.P.C.)

Sodium cinnamate .	5 grams
Glycerine . .	95 grams

Rub the cinnamate to powder and incorporate the glycerine; transfer to a flask, plug with cotton-wool, and heat on a sand-bath until dissolved.

Glycer. Talci Co., C.F. [Edit. 1.]

Boric acid . . .	℥iij.
Thymol	℥j.
Menthol. . . .	℥j.
Oil of eucalyptus . .	♏j.
Oil of wintergreen . .	♏ij.
Purified talc . . .	℥L.
Glycerine . . .	℥xx.

Dissolve the thymol and menthol in the oils. Boil the glycerine for five minutes and dissolve in it the boric acid, then add the talc and the oils; triturate thoroughly until a homogeneous mixture results.

Glycer. Thymol. Alkalinum, B.F.
(*Glycer. Thymol. Co., B.P.C.*)

Sodium bicarbonate	℈v.
Sodium biborate	℈x.
Sodium benzoate	℈iv.
Sodium salicylate	℈ij.
Menthol	gr. ij.
Pumilio pine oil	♏iv.
Wintergreen oil	♏ij.
Thymol	gr. iv.
Eucalyptol	♏xij.
Alcohol (90-per-cent.)	ʒiv.
Glycerine	ʒij.
Solution of carmine	♏XL.
Distilled water to	ʒxx.

Dissolve the salts in the water, add the glycerine and solution of carmine, then add the oils previously dissolved in the alcohol, and filter.

This imitates 'Glycothymoline,' and it should be noted that that proprietary article is trade-marked. The B.P.C. is approximately the same, and uses talc or kaolin to clear.

Glycer. Vitelli, U.S.P. 1890
(syn. *Glyconin*)

Yolk of egg	ʒivss.
Glycerine	ʒvss.

Both by weight. Rub together until thoroughly mixed, and preserve in a well-stoppered bottle.

Glycerophosphates of various bases were introduced into medicine in 1894, when Dr. Albert Robin, a Parisian physician, declared that such salts are the active principle of the orchitic extract with which the late Dr. Brown-Séquard proposed to revivify mankind. Be that as it may, the glycerophosphates have since become notable medicines of the tonic type, and our purpose is to tell how to prepare them. Glycerophosphoric acid consists of a molecule of glycerine and a molecule of phosphoric acid, a molecule of water being set free in the act of union. The empirical formula of the compound is $C_3H_9PO_6$, and the constitutional $C_3H_5(OH)_2.O.PO(OH)_2$. The B.P.C. acid is sp. gr. 1·125 to 1·300. The calcium salt is easiest made by Delage's method, as follows :—

Put into a suitable flask 100 grams of 60-per-cent. phosphoric acid and 150 grams of glycerine. Fix a double-perforated cork into the flask, one hole with a thermometer in it, the other with a safety-tube as a vent. Then heat with a bunsen over gauze. The mixture begins to boil at 120° C. and turns slightly pale, darkening until 160° is reached, and between that and 190° it becomes dark brown, syrupy, and gives off acrolein vapour. The heat is then removed and the mixture allowed to cool, when it becomes viscous. Next the mass is mixed, about 30 grams at a time, with a chalk mixture (50 grams of precipitated chalk to 250 c.c. of water), the mixture well stirred to promote effervescence, and at the end of six hours it is filtered. The filtrate is a solution of calcium glycerophosphate, which is precipitated by the addition of alcohol, is collected, dried partially with bibulous paper, and finally over sulphuric acid in a bell-jar.

From the calcium salt other saline compounds can be prepared. The medicines were given subcutaneously at first, but now they are solely given *per os* in doses of 5 to 15 gr. per day; iron glycerophosphate being given in daily doses of 3 to 5 gr. The following are typical methods of administering the glycerophosphates in neurasthenia and similar nervous affections accompanied by gastric weakness.

Glycerophosphate Cachets

Glycerophosphate of lime	gr. v.
Glycerophosphate of magnesium	gr. iss.
Glycerophosphate of iron	gr. ¾
Powdered nux vomica	gr. ss.
Pepsin	gr. iiss.
Diastase	gr. ¾

This mixture to fill one cachet.

This with starch in place of diastase is *Pulv. Glycerophosphat. Co.*, B.P.C.

Glycerophosphate Pastilles

Glycerophosphate of lime	gr. iij.
Powdered chocolate	gr. xv.
Syrup	a sufficiency

To make one pastille.

Syr. Glycerophosphat., B.P.C.

Triturate calc. glycerophos. ℈x., potassium, sodium, and magnesium glycerophos. of each ℈v., ferri glycerophos. ℈iiss., with glycerin. ʒiv. and aq. cinnam. ʒiv. Dissolve caffein. ℈iiss. in ac. glycerophos. (20 p.c.) ♏200; mix the solutions and in the mixture dissolve sacch. alb. ʒviij. by heat, then add chloroform. ♏xx., alcohol. ♏xl., ess. vanillæ ♏200, glycer. croci ♏100, aq. cinnamomi ad ʒxx.

Dose: ʒj. to ʒij.

Syr. Glycerophos., Co., B.P.C., contains strychnine 2 gr. in 20 oz. but no vanilla, saffron, or cinnamon-water; instead are tincture of cudbear ʒv. and distilled water to ʒxx.

The formulas are modifications of the Br.P.C.

Gould's Hop Compound

Hops	1½*d.* worth
Assar root [sassafras]	2*d.* ,,
Codru bark [burdock]	1½*d.* ,,
Kradna root [mandrake]	1½*d.* ,,
Rolique root [liquorice]	1½*d.* ,,
Noil root [dandelion]	1½*d.* ,,
Rock root [gentian]	1½*d.* ,,
Tacher [chiretta]	1½*d.* ,,
4 pieces of lump-sugar	

Place the roots and bark in 3 pints of water, simmer slowly down to 1 quart, pour the boiling liquid on the hops, tacher, and sugar, allow it to stand thirty minutes, cool, strain, and bottle.

This is the prescription of S. Gould, of Bradford, which chemists are sometimes asked to dispense. The correct names of the drugs are in brackets.

Gossypia Antiseptica, or antiseptic cottons, are made by saturating absorbent cotton-wool in solutions of certain antiseptics, such as boric acid, drying, and carding thereafter. While the saturation is effected in a similar way to gauzes

(*see* p. 564), the drying and carding require special experience and apparatus, to describe which is beyond the limits of this book.

Gossypium Styptieum, N.F., is made by immersing absorbent cotton in a mixture of solution of ferric chloride, U.S.P., 5 parts, glycerine 1 part, and water 4 parts for one hour, pressing until the cotton is twice its original weight, and drying.

GRANULAR EFFERVESCING PREPARATIONS

The late Mr. Alfred Bishop, in 1857, introduced 'Granular Effervescent Citrate of Magnesia,' thus paving the way for official recognition of granular effervescent salts within a decade, and creating an entirely new branch of trade for wholesale druggists, many of whom now produce these granular preparations at the rate of tons per day during the warm weather. Preparations of this nature contain either citric or tartaric acid, or both, the acid being in slight excess of the alkali used. Obviously, if any medicated preparation contains a potassium salt tartaric acid must not be used in excess, because in that case bitartrate of potassium would be precipitated, and would render the draught unsightly. The nature of the essential ingredients of the granules depends, however, upon the methods of granulation, of which there are four :—

(1) To make the powders into a tough paste with rectified spirit, press the mass through a large-meshed sieve, and dry quickly. This is the method almost universally pursued in the United States, but it is so expensive that it is only adopted in this country when making granular preparations a few ounces at a time.

(2) The method suggested by the late Henry Napier Draper and adopted by the British Pharmacopœia—viz., to heat the dried ingredients together until a temperature between 200° and 220° F. is reached, stirring assiduously all the while so as to form granules. The objections to this plan are that it is difficult to work on the large scale, and much of the ingredients adheres to the dish, so being practically lost for granulation-purposes.

(3) The ingredients are heated quickly until the mass becomes pasty. The pasty mass is lifted to the top at intervals of a few seconds, so as to allow a fresh portion of the powder to come in contact with the bottom of the basin. It is then pressed through a wire sieve of convenient-sized mesh (No. 6 to No. 12 sieves are best), using a slight downward and a

smart lateral pressure. The granules are received on a blanket of white felt or unnapped flannel, or upon white paper, and dried in a warm room. On the large scale flat circular steam-jacketed pans are used for heating the powder. On the small scale the best apparatus to employ are an enamelled-iron dish and a slow-combustion gas-furnace. With some practice one soon learns how to moderate the heat of the naked gas-flame so as to produce a good mass without charring.

(4) In some cases, such as preparations containing alkaloids, antipyrin, &c., the basis ingredients are allowed to stand separately in a damp atmosphere for twelve hours, then they are carefully blended along with the medicinal ingredient, and pressed down in an earthenware basin. After about twelve hours the mass becomes sufficiently pasty for granulation, just as if it had been heated, and the colouring of the granules is thus avoided.

As the last two methods are invariably followed in England we shall confine our attention to them. The principle of both is the same. It is well to understand at the outset how granulation takes place. If one were to heat, say, lemon kali, it would not become pasty, for there is no citric acid in it, and it is the citric acid in the granular preparations which is the chief cause of granulation, assisted, to a small extent, by the moisture of the sugar. A glance at the formula of the acid ($H_3C_6H_5O_7,H_2O$) will show that water is present. This is set free on heating (as already explained on p. 244), and the moisture partly forms a syrup with the sugar, thereby acting as an adhesive agent. The object to be sought is to apply enough heat to cause the whole to adhere, and to lose as little carbonic acid as possible during the process. The same result is obtained by damping the sugar or the mixed powders before heating, but the difficulty of uniformly damping the powder results in unequal granulation. The only effective substitute for citric acid is bisulphate of sodium, the use of which is illustrated in one of the recipes, while undried magnesium sulphate in sufficient proportion gives moisture enough to granulate.

Mag. Cit. Gran. Eff., or, as it is now with safety called Granular Effervescing Citrate, was originally made with neutral citrate of magnesium as one of its ingredients, but Mr. Bishop 'had to abandon this plan' (so he stated eleven years after its introduction) 'by finding that the compound would not

keep, soon losing its effervescence and colour.' What he put in its place is not stated, but the practice of manufacturers nowadays is to use Epsom salt. Moreover, as the popularity of the article has increased year by year, and its use extended to making a pleasant effervescing drink, magnesia is frequently entirely absent, the sugar has increased enormously, and it may be bought nicely flavoured with lemon and the like. The reduction of sulphate of magnesium was inevitable, for the somewhat bitter flavour is not appreciated by the public palate with a craving for a pleasant drink for a warm summer's day ; but competition in price is chiefly responsible for increase in the sugar, and for the same reason the citric acid has been decreased from the original proportion of 1 to 1 of tartaric acid to 1 to 6 or 7. With the latter proportion the addition of 1 oz. of water to 4 lbs. of the mixed powders almost becomes necessary for granulation. The first formula which we give is a fair representative of the better qualities of the citrate.

I

Sodium bicarbonate .	lb. ij.
Tartaric acid . . .	℥xxv.
Citric acid . . .	℥iv.
Sulphate of magnesium (powdered but not dried)	℥iij.
Icing-sugar . . .	lb. iij.

Granulate by the third method.

II

Sodium bicarbonate .	℥xij.
Tartaric acid . . .	℥x.
Sulphate of magnesium .	℥ij. ʒiij.
Citric acid . . .	ʒv.
Oil of lemon . . .	gtt. x.

Rub the citric acid and sulphate of magnesium together to powder, then the tartaric acid and soda ; mix the two and sift. Heat a polished copper dish on a water-bath and introduce the mixture. After the lapse of a few minutes the mass will be found to separate, and it should then be stirred with a glass or bone spatula, until the granules are completely formed. Finally the oil of lemon is added. The operation may be judged to be complete when the granules are perfectly white and do not feel soft upon pressure with the spatula. Separate the best granules by means of a suitable sieve, and use up the waste in the next batch.

III

Acid. citric. . . .	lb. iv.
Magnesiæ calc. (Jenning's)	lb. iss.
Sodii bicarb. (Chance's) .	lb. iij.
Acid. tart. . . .	lb. iij.
Pulv. sacch. alb. . .	lb. vj.
Ol. limonis . . .	℥ss.

To the powdered citric acid add the sugar and mix thoroughly ; then add the soda, magnesia, and tartaric acid, sift three times, and granulate by No. 1 method.

We give Nos. II. and III. as curiosities mainly ; the former because it is Draper's original recipe, which the B.P. has followed so far as directions are concerned. The third is an

excellent example of how far conscientious people will go in the direction of truth. It is supposed to produce Veritable Citrate of Magnesia, which it does not any more than No. 1. It is only public analysts who worry about the public not getting 'citrate of magnesia' when they ask for it. The chemist and druggist's duty in the matter is to give the public what they want, and that is such preparations as No. 1. We have already referred to the use of crystallised sodium bisulphate as a substitute for citric acid. The formula (devised by Mr. F. C. Clayton, of Birmingham) is :—

Bicarbonate of sodium	lb. j.	Bisulphate of sodium	℥ij.
Tartaric acid	℥xss.	Sugar	℥xviij.
Citric acid	℥iv.	Oil of lemon	a sufficiency
Epsom salt	℥j.		

This powder granulates well without the bisulphate, but when Mr. Clayton devised the formula the idea was that the citric and tartaric acids should be present in equal proportions. Thirteen ounces of tartaric acid and 4 oz. of bisulphate serve without the citric acid. Mr. Clayton proceeds :—

> The ingredients are mixed in the usual manner by sifting, and thrown on to a hot metal plate (preferably of zinc, but may be made of enamelled iron, tinned iron, or tinned copper) to a depth of not more than ½ inch. In a few minutes the mixture becomes spongy, when it is worked about and turned over with a scoop or other convenient instrument, to prevent any particles becoming too dry. In a minute or two more (this is the most delicate part of the operation, but impossible to describe on paper) it should be thrown upon a cold slab, and put through a sieve of four to six meshes per inch, *again heated* and sifted through a rather finer sieve, and finally heated until desiccation is complete. It is well to watch it at first to see that the newly made granules do not adhere to each other ; but during the latter part of the final drying this is unnecessary.

Mr. Clayton remarked, when he communicated his process to the British Pharmaceutical Conference, that he knew a manufacturer who dried his preparation in a warm closet on skins of white leather—'but the reason I know not.' Truly there is nothing like leather. That part of Mr. Clayton's method beginning with the two words italicised is objectionable, and exactly the point where the white leather comes in. Flannel blankets are better, however.

Flavoured Granular Citrates are made with the addition of colouring matters and flavours similar to those

noted on pp. 247 and 248. These must be perfectly blended with the powders before heating.

Medicated Granular Preparations.—The British Pharmacopœia, 1898, contains formulas for six granular effervescent preparations, of which *sodii citro-tartras effervescens* is the type and basis for medicated preparations (No. I. below). The formulas and process have been investigated by Mr. George Lunan, F.C.S., on behalf of the Pharmacopœia Committee (*C. & D.*, 1906, II., 903), and he has proposed to alter the quantities as indicated in the formula in brackets, but quantities are also adapted to medicaments :—

I		II	
Sodium bicarbonate .	51 oz. [55]	Bicarbonate of sodium .	℥xij.
Tartaric acid . .	27 oz. [26½]	Tartaric acid . . .	℥v.
Citric acid . .	18 oz. [21]	Citric acid . . .	℥ivss.
Refined sugar . .	15 oz.	Refined sugar . .	℥x.

Formula No. II. is an improvement on the B.P., 1898, proportions. The official method of granulation and Lunan's emendation are :—

B.P. 1898

Mix the powders thoroughly; place the mixture in a dish or pan of suitable form, heated to between 200° and 220° F. (93·3° and 104·4° C.). When the mixture, by aid of careful manipulation, has assumed a granular character, separate it into granules of uniform and convenient size by means of suitable sieves. Dry the granules at a temperature not exceeding 130° F. (54·4° C.). The product should weigh about 100 ounces.

Lunan and B.P.C.

Mix the sodium bicarbonate, the sugar or gluside, and the medicament when present, pass them through a No. 20 to No. 30 incorrodible sieve, subject the acids previously mixed to the same process, and thoroughly mix the two sifted powders. Place the mixed powders in layers on a suitable dish, pan, or glass tray, heated to between 75° C. and 85° C. if required, but not to exceed the latter temperature. When the mass by means of proper manipulative kneading and compression has assumed a uniformly plastic condition, suitable for granulation, rub it through a No. 5 to No. 10 incorrodible sieve according to the size of granule desired and most adapted to the special effervescent preparation. Dry the granules at a temperature not exceeding 50° C. The product should weigh 100 oz.

For Lunan's suggested formulas *see* Supplementary Chapter.

The medicated preparations most in demand are as noted below, the quantities given being the weight of the medicine to add to each 70 gr. of the basis before granulating. As the loss of weight in granulating is between 10 and 15 per cent., the dose of medicine is contained in a teaspoonful (ʒj.) of the granular preparation :—

*Acetanilide	5 grains
Ammonium bromide	10 grains
*Antipyrin	5 grains
Bismuth carbonate	5 grains
*Bismuth citrate (ammonio)	2 grains
Caffeine citrate (B.P. 4 p.c.)	
*Caffeine hydrobromide	1 grain
Cerium oxalate	2 grains
Exalgin	2 grains
Iron citrate (ammonio)	2 grains
Iron and quinine citrate	2 grains
Iron carbonate (Blaud's)	2 grains
Iron iodide	1 grain
Lithium citrate (B.P. 5 p.c.)	
Lithium salicylate	5 grains
*Phenacetin	5 grains
*Piperazine	5 grains
*Piperazine and phenocoll, of each	5 grains
Potassium benzoate	5 grains
Potassium bromide	5 grains
Potassium citrate	10 grains
Potassium iodide	2 grains
*Quinine citrate	1 grain
*Quinine hydrobromide	2 grains
Sodium bromide	10 grains
Sodium hypophosphite	4 grains
*Sodium salicylate	5 grains
Strontium bromide	5 grains

In making the granular salts of such delicate substances as antipyrin, piperazine, and others indicated by *, granulation should be effected by the fourth method, or by massing the ingredients with rectified spirit, otherwise the granules become yellow. The granules should be dried at a low heat. For small quantities, required to be made extemporaneously, the spirit method is preferable. Several compound salts are in demand, such as are here noted.

Aspirin Effervescens, B.F.

Aspirin	℈iv.
Sodium bicarbonate	ʒviij.
Tartaric acid	ʒivss.
Citric acid	ʒij. ℈iiss.

Mix well and granulate on a water-bath.

Dose: ʒj. to ʒij. (= 5 to 10 gr. of aspirin).

Digestive

Scale pepsin	gr. ij.
Ammonio-citrate of bismuth	gr. v.

In each drachm.

Easton's

Ferri pyrophosph.	gr. j.
Quinin. hydrochlor.	gr. j.
Strych. sulph.	gr. $\frac{1}{32}$

In each drachm.

Granulæ Lithii Citratis Laxativæ, B.F. and B.P.C.

Lithium citrate	℈iv.
Sodium phosphate, dried	ʒiv.
Sodium bicarbonate	ʒv. ℈iiss.
Tartaric acid	ʒij.
Citric acid	℈vij.

Mix well and granulate.

Dose: ʒj. to ʒij.

Magnesian Chalybeate

Ferri sulph. gran.	gr. v.

With each drachm of magnes. sulph. eff., B.P.

Tonic and Digestive

Bism. ammon. cit.	gr. v.
Ferri ammon. cit.	gr. iij.
Pepsin.	gr. ij.

In each drachm.

Artificial mineral-water salts may be converted into granular effervescing preparations exactly in the same way as Sodii Sulph. Eff., B.P., the mineral-water salt taking the place of sodii sulph., but in half the proportion, *e.g.* :—

Recipe for Vichy Salt

Bicarbonate of sodium	8 oz. 256 gr.
Dried phosphate of sodium	21 gr.
Dried sulphate of magnesium	231 gr.
Dried chloride of potassium	305 gr.
Dried chloride of sodium	428 gr.

Mix.

Recipe for Gran. Eff. Vichy Salt

Vichy salt	12½ oz.
Bicarbonate of sodium	25 oz.
Tartaric acid	13½ oz.
Citric acid	9 oz.

Mix and granulate in the usual way.

These salts are better without sugar, but, if desired, the mag. sulph. eff. formula may be followed similarly.

GUTTÆ—DROPS

The following aqueous solutions, or eye-drops, are frequently required at the dispensing-counter:—

	Per oz.
*Atropine sulphate	1, 2, and 4 gr.
*Cocaine hydrochloride	10 gr.
*Copper sulphate	2 gr.
*Daturine sulphate	2 gr.
Duboisine sulphate	1 gr.
Homatropine hydrobromide	2 and 4* gr.
*Hyoscine hydrobromide	2 and 4 gr.
Mercury perchloride	⅛ gr.
*Physostigmine sulphate	2 and 4 gr.
*Pilocarpine nitrate	2 gr.
Silver nitrate	2 and 4 gr.
Zinc chloride	2 gr.
Zinc sulphate	2 gr.

In each case the solvent is distilled water recently boiled.

The B.P.C. includes those marked * as *Guttæ atropinæ*, &c. It also prescribes the following eye-drops:—

Gutt. atrop. et cocain. (atr. sulph. 1, coc. mur. 2. p.c.).
Gutt. homat. et cocain. (homatr. hydrobrom. 0·5, coc. mur. 1 p.c.).
Gutt. hyoscin. et cocain. (hyos. hydrobrom. 0·5, coc. mur. 1 p.c.).
Gutt. physostigmin. et cocain. (physos. sulph. 0·25, coc. mur. 1 p.c.).
Gutt. zinci chlor. et cocain. (zinc. chlor. 0·5, coc. mur. 0·25 p.c.).

Four grains per oz. (440 minims) = approximately 1 per cent.

Guttæ Amaræ (Baumé)

Pulv. sem. Ignatii	℥x.
Potassii carbonat.	℈ij.
Fuliginis splendent.	gr. viij.
Spt. tenuior.	℥xx.

All by weight. Macerate ten days, press, and filter.

Barrack-Sergeant's Drops

Ol. juniperi	ʒiss.
Ol. terebinthinæ	ʒiss.
Tr. opii	ʒij.
Spt. rectificat.	ʒiij.

Dose: Ten to twenty drops on sugar.

Bateman's Pectoral Drops

Tr. opii	ʒv. ɱxx.
Tr. catechu	ʒss.
Spt. camphoræ	ʒv.
Ol. anisi	ɱviij.
Sacch. ust.	ʒij.
Spt. tenuior. ad	ʒxvj.

Misce et filtra.

Cholera-drops

Tr. opii	ʒij.
Tr. capsici	ʒij.
Tr. rhei co.	ʒij.
Spt. camphor.	ʒij.
Ess. menth. pip. (1 in 10)	ʒij.

Dose: Fifteen drops for pain, 20 to 30 drops for diarrhœa.

P.F. 4

Tr. capsici	ʒiss.
Spt. menthæ pip.	ʒiij.
Spt. camphoræ	ʒivss.
Æther. rect.	ʒiij.
Tr. catechu	ʒvj.
Tr. opii	ʒiss.

Dose: A teaspoonful in a wineglassful of water every two or three hours.

Swedish or Thieleman's

Ol. menth. pip.	ʒj.
Spt. rectificat.	ʒviij.
Tr. opii crocat.	ʒiij.
Tr. opii	ʒviij.
Tr. valerianæ	ʒxiiiss.

Dose: One fluid drachm.

Diarrhœa-drops

(syn. *Dr. Jessop's Drops*; *'Sun' Cholera-drops*)

Acid. nitric. dil.	ʒij.
Spt. camphoræ	ʒj.
Tr. opii	ʒj.
Ol. menth. pip.	ɱv.
Spt. chloroformi	ʒij.
Glycerinum ad	ʒj.

Dose: Half a teaspoonful in a wineglassful of water every three hours.

Earache-drops

I

Camphor. chloral.	ʒj.
Ol. amygdal. dulc.	ʒss.
Glycerini	ʒvj.

A few drops to be put in the ears twice a day; then a little cotton-wool is put in the ears.

II

Liquid ox-gall	ʒss.
Glycerine	ʒss.

For hardened wax.

Hot Drops

(syn. *Tr. Capsici et Myrrhæ, N.F.*, *'No. Six'*)

Capsicum, in powder	No. 20 ʒss.
Myrrh, in coarse powder	ʒij.
Rectified spirit	a sufficiency
Water	a sufficiency

Mix the powders with an equal bulk of clean, fine sand, and percolate with a mixture of 9 parts of spirit and 1 part of water until 16 oz. of tincture is obtained.

Guttæ Hollandicæ, otherwise called Dutch drops, ol. empyreumaticum batavicum, ol. haarlemensis, Tilly drops, and medicamentum gratia probatum. It is impossible to say what the true Haarlem oil is composed of. It is still made in the city of Haarlem, costs six times more than the imitation, is

lighter in colour, and more transparent, but the properties are very similar. As to what it was originally there is also some doubt. One writer says that it was the red oil obtained as a second fraction in the dry distillation of resin; another, that it was made by the dry distillation of a mixture of aloes, myrrh, olibanum, and olive oil; and another, that it was a mixture of balsam of sulphur, oil of turpentine, and Dippel's oil. The last, *minus* the ol. animalis, is the form generally adopted now, and the following is a translation of directions for making it followed in Denmark and Holland :—

Mix in an iron vessel large enough to allow some frothing 4 parts of linseed oil and 1 part of sulphur. Heat to a temperature of 165° C., stirring well all the time, until the mixture drops off the stirrer with a glassy appearance. Remove from the fire and add 15 parts (by weight) of oil of turpentine, and agitate until solution is complete or nearly so. Then filter. The liquid should be limpid and of a brownish-red colour.

Of the following formulas only Nos. I. and III. closely resemble the original. Nos. II. and IV. are strange diversions, which show how things may become altered :—

I

Balsam of sulphur	ʒj.
Oil of turpentine	ʒiv.

II

Ol. lini	ʒxl.
Resin.	lb. j.
Sulphur.	lb. j.

Boil till stringy, remove from the fire, and add

Ol. terebinth.	ʒxx.
Liq. ammon. fort.	mL.

III

Balsam of sulphur	ʒj.
Oil of turpentine	ʒij.
Huile de Cade	ʒiv.

All by weight.

IV

Ol. terebinth.	ʒj.
Tr. guaiac. simp.	ʒj.
Spt. æther. nit.	ʒj.
Ol. succin. rect.	ʒj.
Ol. caryoph.	ʒj.

The preparation is put up in curious ½-oz. phials, wrapped in a more curious, ancient-looking handbill. Sailors and others use it as a diuretic, &c., and, nasty though it be, it is efficacious.

Jesuit's Drops
(*Elixir Antivenereum*)

I

Guaiacum	ʒij.
Peru balsam	ʒj.
Sassafras	ʒj.
Rectified spirit	ʒx.

Digest a week and filter.

II

Copaiba	ʒj.
Guaiacum	ʒij.
Oil of sassafras	ʒi.
Salt of tartar	ʒss.
Rectified spirit	ʒv.

Digest a week and filter.

An almost obsolete preparation,

for which tr. benzoin. co. is frequently, but erroneously, given: there is little in common between them.

Rheumatic Drops

P.F. 2

Tr. guaiaci ammon.	ʒij.
Ol. menthæ pip.	♏v.

Twenty to thirty drops every four to six hours.

Harrogate Salts

Pulv. potass. sulph. c. sulph.	ʒiss.
Pulv. potass. bitart.	ʒv.
Magnes. sulphat.	ʒxl.

Two ounces to be put in a wine-bottleful of water, and a wineglassful taken every morning.

Sal Aperiens, B.P.C., is pot. bitart. 15, pot. sulphurat. 3, mag. sulph. exsic. 82.

Haustus Phosphoricus

('Funk' Draught for Examination Candidates)

Acid. phosphoric. dil.	ʒij.
Liq. strychninæ	♏xv.
Aq. ad	ʒj.

Dose: A teaspoonful in water thrice daily for three days before the examination, and a double dose immediately before entering.

Hiera Picra

(*Pulv. Aloes c. Canellâ*)

I

Pulv. aloes	ʒxij.
Pulv. canellæ	ʒiij.

The London Pharmacopœia, 1788, prescribed Socotrine aloes, and the Dublin hepatic. The U.S.P., 1870, continued the London form, which is now *Pulv. Aloes et Canellæ*, B.P.C. The 'National Formulary' prescribes purified aloes, U.S.P. The Edinburgh hiera picra was a mixture of aloes, Virginian snake-root, and ginger. This mixture is the old *Tinctura Sacra* in a dry form. As an electuary it was *Hiera Logadii*. In some parts of the country the subjoined recipe is in use, and is a pleasanter medicine than the preceding:—

II

Pulv. aloes bbds.	ʒviij.
Pulv. canellæ	ʒij.
Pulv. zingib.	ʒss.

Dose (as an emmenagogue), 5 gr. to 15 gr.—*i.e.*, as much as will lie upon a threepenny-piece or sixpence—every night.

Note.—Corruptions of the name of this very old remedy are 'Heiree Peiree' and 'Hicra Picra.'

Hoff's Consumption-cure

Acidi arseniosi	0·1 gram.
Potassii carbonat.	0·2 gram.
Acidi cinnamici	0·3 gram.
Aquæ destillatæ	5·0 gram.

Coque usque ad perfectam solutionem, dein adde

Spt. vini gallici	2·5 gram.
Ext. laudani aq.	0·3 gram.
Aquæ destillatæ	2·5 gram.

Solve et filtra.

Dose: Six drops after dinner and supper, gradually increasing to twenty-five drops.

Infants' Carminatives

P.F. 7

Sodii bicarb.	ʒj.
Potass. bromid.	℈ij.
Cretæ præp.	℈ij.
Magnes. carb. levis	℈ij.
Ol. anethi	♏iv.
Ol. carui	♏iv.
Ol. anisi	♏iv.
Ol. rutæ	♏iv.
Tr. asafetidæ	♏xx.
Syr. simplicis	ʒj.
Aquam ad	ʒviij.

P.F. 8

Magnes. carb. pond.	ʒiv. ℈ij.
Tr. camphoræ co.	ʒvj.
Syr. simplicis	ʒj.
Aq. cinnam. vel anisi ad	ʒx.

Infants' Preservatives

P.F. 22

Magnes. carb.	ʒvj. ℈ij.
Pulv. sacchar. alb.	ʒiij.
Ol. anisi	ʒss.
Ol. fœniculi	♏x.
Tr. castorei	♏lxxx.
Tr. cardam. co.	ʒv.
Liq. cocci	q.s.
Aq. dest. ad	ʒxx.

P.F. 23

Potass. bromid.	ʒiv.
Sodii bicarb.	ʒiv.
Tr. anthemid.	ʒiv.
Tr. hyoscyam.	ʒij.
Aq. anisi,	
Aq. anethi aa.	ʒiv.
Syrup.	ʒviij.
Aq. ad	ʒxx.
Sacch. ust.	q.s.

INFUSA—INFUSIONS

When a simple infusion of a drug is required, if there is no official formula for it, the best strength to adopt is 1 oz. of the drug to a pint of boiling water, infusing half an hour, and straining. This serves for American and English prescriptions. Most Continental countries adopt a strength of 1 in 10, except France, where medicinal infusions are made as thin as 'tea'—*i.e.*, 1 in 100 or 200.

Concentrated infusions are eight times stronger than the fresh preparations, and contain from 20 to 25 per cent. of rectified spirit to preserve them. They are prepared in various ways, of which good examples are given in the British Pharmacopœia under liquores conc., which are 1-to-9 preparations. The following formulas also serve to illustrate methods of manufacture:—

Inf. Aurant. Conc.

English bitter-orange peel, cut small	ʒviij.
Boiling water	ʒviij.

Mix, pack in a percolator, pour on more boiling water to get ʒxij. of percolate, add ʒiv. of rectified spirit, and set aside. Continue the percolation with hot water until ʒxx. more of percolate is obtained. Evaporate to ʒiv., mix with the reserved portion, and after standing for a day or two decant the clear liquor and filter the rest.

Inf. Aurant. Co. Conc.

English bitter-orange peel	ʒiv.
Fresh lemon-peel	ʒij.
Bruised cloves	ʒj.
Rectified spirit	ʒiv.
Water	a sufficiency

Mix the spirit with 3 oz. of water and pour upon the drugs. In three hours pack in a percolator and percolate with cold water until 10 oz. is obtained. Reserve this. Continue percolation with boiling water until other 30 oz. is obtained. Evaporate this to 9½ oz. Mix with the reserved portion, add ½ oz. S.V.R., and filter.

Inf. Buchu Conc.

Bruised buchu-leaves	ʒvij.
Rectified spirit	ʒviij.
Water	ʒxij.

Make 20 oz. of tincture by percolation.

Inf. Calumbæ Conc.

Calumba (in No. 40 powder)	ʒvij.
Rectified spirit	ʒiv.
Water	ʒxvj.

Make a liquor by percolation with the mixed liquids, using more spirit and water in the same proportions to obtain 20 oz. of percolate.

In a similar way prepare inf. caryoph. conc., inf. catechu conc., inf. cuspariæ conc., inf. gentian. conc., inf. serpent. conc., and inf. valerian. conc., in each case using eight times the official quantity of solids.

Inf. Cinchon. Acid. Conc.

Ext. cinchon. liq.	ʒviij.
Acid. sulph. arom.	ʒij.
Spt. rectificat.	ʒiij.
Aq. destillat.	ʒvij.

Mix the last three liquids and add the extract. Set aside for several days, decant the clear, and filter the rest.

Inf. Digitalis Conc., B.P.C.

Treat 1 oz. 44 gr. of digitalis in No. 20 powder with 4 fl. oz. of alcohol and 16 fl. oz. of diluted chloroform-water by macero-percolation so as to produce 20 fl. oz. of concentrate (1 to 7).

Store in small, completely filled and well-closed bottles in the dark. Keep for one month only.

Inf. Gentianæ Co. Conc.

Br.P.C.

Gentian (No. 20 powder)	2 oz.
Dried bitter-orange peel	2 oz.
Dried lemon-peel	1 oz.
Tincture of fresh lemon-peel	1 fl. oz.
Alcohol (90-per-cent.)	4 fl. oz.
Distilled water	sufficient

Macerate the drugs in 1 pint of distilled water for twenty-four hours; express. Reserve 10 fl. oz., to which add the tincture and alcohol. Macerate the marc twice in 1 pint of water (six hours), press, mix, and evaporate to 5 fl. oz. Add to the first portion to make 1 pint. A 1-to-7 preparation.

Farr and Wright and B.P.C.

Gentian (in No. 10 powder)	10
Dried bitter-orange peel (in No. 10 powder)	10
Tincture of lemon	10
Tincture of orange	5
Alcohol	17·5
Chloroform water (1 in 1,000) to	100

Moisten half of the drug with chloroform-water, after two hours pack in a percolator and percolate with chloroform-water. Moisten the second half of the drug with the first percolate. Continue repercolation until 65 of second percolate is obtained. Add to this tinctures and alcohol, continue repercolation with chloroform-water, evaporate to 2·5, add to reserve, and filter.

Inf. Maticæ Conc.

Matico-leaves	ʒviij.
Rectified spirit	ʒiv.
Boiling water	a sufficiency

Pour a pint of boiling water upon the leaves, macerate twenty-four hours, and press out the liquor, which reserve. Repeat the maceration with another pint of water,

press, and mix the liquors. Bring to the boil and evaporate to 16 oz. Add the spirit, and strain through flannel.

Inf. Quassiæ Conc.

Quassia	ʒij.
Rectified spirit . .	ʒiv.
Water . . .	a sufficiency

Macerate the quassia in 16 oz. of water overnight, strain, and wash the marc with water to 16 oz. Add the spirit and ½ oz. of kaolin. Shake well and filter, returning the filtrate until it comes through bright. Use a small quantity of animal charcoal if it is required light.

Inf. Rhei Conc.

Rhubarb (in coarse powder)	ʒiv.
Rectified spirit . .	ʒiv.
Water . . .	a sufficiency

Macerate the rhubarb in 16 oz. of water for twenty-four hours and press out the liquor. Add the spirit to it and reserve. Again macerate the rhubarb in as much water as is required to make a pint, and after twenty-four hours press out the liquor. Mix with the reserved portion and filter.

B.P.C. is double this strength.

Inf. Rosæ Acid. Conc.

Rose-petals . . .	ʒiv.
Sulphuric acid . .	♏lxxx.
Water to . . .	ʒxvj.

Macerate the petals in 5 oz. of the liquid for a day, pack in a percolator, and continue percolation with the acid mixture until 16 oz. of percolate is obtained; then add 4 oz. of rectified spirit.

B.P.C. percolates with the mixed liquids, reserving 7½ per cent. of dilute acid to the last.

Inf. Senegæ Conc.

Senega (in No. 20 powder)	ʒviij.
Rectified spirit . .	ʒiv.
Water	ʒxvj.

Make 20 oz. of liquor by repercolation, and to the finished product add solution of ammonia ♏x.

B.P.C. uses senega 40, strong ammonia sol. 0·52, alcohol 25, chloroform-water (1 in 1,000) 75, and repercolates, adding wintergreen oil 0·15 to the finished product. This is Farr and Wright's method.

Inf. Sennæ Conc.

Fol. sennæ . . .	ʒxvj.
Rad. zingib. contus. .	ʒij.
Spt. rectificat. . .	ʒiv.
Aq. destillat. . . .	ʒxxx.

Macerate the senna and ginger for twenty-four hours in 16 oz. of water, stirring occasionally, and press out the liquor. Add the spirit, and reserve. Repeat the maceration and pressure with the rest of the water to make 20 oz. of product, and filter with ½ oz. of kaolin.

B.P.C. macero-expresses senna with the diluted alcohol, omitting ginger and adding 2½ p.c. of tr. zing. fort. to the product.

The B.P.C. methods are those of Farr and Wright (*C. & D.*, 1906, I., 252, and *P.J.*, 1906, I., 163, viz. (for a pint) :—

Macero-expression.—Eight times the B.P. quantities of solids are macerated in 15 oz. of chloroform-water (1 in 1,000) for twenty-four hours and pressed. To this liquor add the alcohol. Repeat the maceration twice,

evaporating the weaker liquor to produce, with the reserve, 20 oz. Set aside for seven days, decant the clear liquor, and filter the rest. In this manner the following are prepared (in parentheses, aq. is chloroform-water as above, al. alcohol, and M. macerate).

Aurant. Co. (macerate cloves 2½ in al. to 20, add tr. limon. and tr. aurant. aa. 5: macerate peels in aq. to make 70); *Buchu* (tr. buchu 22½, and al. 10, added to 67½ of aq.; M.); *Calumbæ* (al. 25 to 75 of aq.; M.); *Cascarillæ* (al. 20, tr. cascar. 7½, to 72½ of aq.; M.); *Cusparíæ* (al. 25 to 75 aq.; M.); *Digitalis* (al. 20 to 80 aq.; M.); *Lupuli* (al. 1, aq. 3, as menstruum).

Repercolation.—This is as described under inf. gent. co. conc. The following are prepared in this manner with eight times B.P. quantities of solids for 100. Menstrua and additions to percolate are in parentheses (q.s. = to 100):—

Anthem. (20 p.c. al., add ol. anthem. 1 drop to each oz. of flowers); *Aurantii* (tr. aurant. 5, al. 22·5, aq. q.s.); *Caryophyll.* (20 p.c. al.); *Chiratæ* (al. 25, aq. q.s.); *Gentian. Co.* (*see* p. 650); *Krameriæ* (al. 25, aq. q.s.); *Quassiæ* (al. 20, aq. q.s.); *Rhei*, *Rosæ*, and *Sennæ* (*see* above); *Serpentariæ* (al. 25, aq. q.s.); *Uvæ-ursi* (alc. 25, aq. q.s.); *Valerian.* (liq. amm. ft. 0·3, al. 25, aq. q.s.).

INHALATIONES—INHALATIONS

These preparations, inhaled with steam or heated air, are generally solutions of aromatic substances in alcohol, or suspended in water by means of light carbonate of magnesium. The following represent the quantities of medicaments for a single inhalation with a pint of water at 140° F. :—

Acetic acid ʒj., glacial acetic acid ʒj.

Aldehyde ɱx., water to ʒj.

Amyl nitrite ɱij., S.V.R. to ʒj.

Benzoic acid gr. iij., kaolin gr. xij., water ʒss. Mix and add tincture tolu ɱxviij., water to ʒj.

Benzoin: tr. benzoin. co. ʒj.

Camphor: spt. camph. ɱxv., S.V.R. ɱxx.

Carbolic acid (liquefied) ɱxx.

Chloroform ʒss., S.V.R. ʒss.

Creosote ɱxx., light magnesium carbonate gr. iiss.

**Cubeb oil* ɱv., light magnesium carbonate gr. iiss.

**Eucalyptus oil* ɱiiss., light magnesium carbonate gr. 1¼.

Iodine tincture ʒj.

**Pine oil*: ol. pin. sylv. ɱv., mag. carb. lev. gr. iiss.

Sulphurous acid ʒj.

Terebene ɱv., light magnesium carbonate, gr. iiss.

Thymol gr. ¾, S.V.R. ɱ7½, light magnesium carbonate gr. ss.

Those marked with an asterisk are adopted by the B.P.C. under *Vapor.*

Churchill's Inhalation
(*Spirone*)

A solution of iodide of potassium in a mixture of acetone (1), glycerine (2), and water (13). The figures approximately represent the parts. The iodide is in the proportion of about 8 gr. to the ounce.

Coghill's Inhalation-fluid
(*Vapor Iodi Ethereus, B.P.C.*)

Ethereal tinct. of iodine	ʒij.
Carbolic acid	ʒij.
Creosote [or thymol]	ʒj.
Rectified spirit to	ʒj.

When the symptoms are urgent chloroform or ether may be added.

The iodine tincture may be prepared by dissolving 33 gr. of iodine in 1 oz. of ether.

Dr. St. Martin's Inhalation

Acid. carbolic.	ʒv.
Liq. ammon. fort.	ʒvj.
Aq. destillat.	ʒx.
Spt. rectificat.	ʒiiss.

To be used in a smelling-bottle for catarrh, colds, &c.

INJECTIONES—INJECTIONS

The following are the most frequently required vaginal and urethral injections. The solvent in each case is recently boiled distilled or soft water. The quantities of the solids are for 1 oz., unless otherwise stated:—

Inj. acidi borici	gr. v. to gr. x.
Inj. aluminis	gr. j. to gr. v.
Inj. alum. et acid. tannic.	gr. v. each
Inj. alum. et zinc. sulph.	gr. iij. and gr. ij.
Inj. argent. nit.	gr. ss. increased to gr. ij.
Inj. cupri sulphat.	gr. j. increased to gr. ij.
Inj. hydrarg. biniod.	HgI_2 1 p.c., and KI 4 p.c.
Inj. hydrarg. perchlor.	gr. ¼ to gr. ss.
Inj. ichthyoli	gr. iv. to ℈j.
Inj. iodoform., B.P.C.	10 p.c. c. mucil. trag. 20 p.c.
Inj. plumbi acetat.	gr. ij. to gr. v.
Inj. plumbi c. opio (ext. opii liq. ɱij.)	ditto
Inj. potass. permang.	gr. ss. to gr. j.
Inj. zinci chlorid.	gr. ss. to gr. ij.
Inj. zinci sulphat.	gr. j. to gr. iv. (B.P.C. 0·68 p.c.)
Inj. zinci sulphocarbol.	gr. ij. to gr. v.

The weaker strengths of solutions should invariably be started with, and the potency gradually increased.

Injection Brou

The following is the formula generally adopted in making imitations of this celebrated injection:—

Zinc. sulph.	gr. xv.
Plumbi acet.	gr. xxx.
Tr. catechu	ʒj.
Tr. opii crocat.	ʒj.
Aquam ad	ʒvj.

Not to be filtered.

To those who have not tr. opii crocat. at hand the following formula will be serviceable:—

Opium	gr. viij.
Catechu	gr. viij.
Saffron	gr. xvj.
Boiling water	ʒvj.

Infuse an hour, strain and add

Acetate of lead	gr. xxij.
Sulphate of zinc	gr. xlv.

Inject. Cupri Sulphat. Co., N.H.

Aluminis . . .	gr. v.
Ferri sulphatis . .	gr. x.
Cupri sulphatis . .	gr. x.
Zinci sulphatis . .	gr. x.
Aquam ad . . .	℥xx.

Inj. Sulphatum, B.P.C., is double above strength, and alum gr. xx.

Inject. Eucalypti, N.H.

Ol. eucalypti . . .	℥iss.
Mucilag. acaciæ . .	℥ij.
Aquam ad . . .	℥viij.

Inject. Iodoformi Co., N.H.

Iodoformi . . .	℥iij.
Bismuth. subnit. . .	℥iij.
Zinci sulphat. . . .	℥j.
Plumbi acetatis . .	℥j.
Glycerini . . .	℥j.
Aquam ad . . .	℥xx.

Inject. Maticæ (Grimault)

Cupri sulphat. . .	gr. iv.
Glycerini . . .	℥ij.
Aq. maticæ ad . .	℥vj.

Aq. maticæ is the distillate from infusion of matico.

Hypodermic Injections should be prepared extemporaneously. In most cases they are plain solutions of alkaloidal or other salts in distilled water. All utensils used should be sterilised by thorough washing and drying in an oven at a temperature of 220° F. The distilled water used must also be recently sterilised by boiling. If these precautions are taken, and the bottles to contain the finished solutions are also sterilised, the solutions keep for a long time if excluded from the air. Camphor, saccharin, salicylic acid, and chloroform are amongst the best non-irritant preservatives of hypodermic injections—salicylic acid being the best of all, in the proportion of half a grain to the ounce. Boric acid is useless. We subjoin the hypodermic doses most frequently prescribed, and from these data chemists will be able to prepare the respective solutions if the prescriber indicates the *volume* of injection he wishes to administer :—

Acid. carbolic. .	gr. $\frac{1}{4}$ to gr. j.
Acid. sclerotic. .	gr. $\frac{1}{4}$ to gr. j.
Arsenii iodidum.	gr. $\frac{1}{100}$
Atropinæ sulphas . .	gr. $\frac{1}{120}$ to gr. $\frac{1}{60}$.
Caffeina . .	gr. $\frac{1}{8}$ to gr. ij. with the same of sodii salicyl.
Cocainæ hydrochlor . .	gr. $\frac{1}{4}$ to gr. $\frac{1}{2}$
Codeinæ phosphas . .	gr. $\frac{1}{8}$ to gr. $\frac{1}{2}$
Ergotinina .	gr. $\frac{1}{300}$ to gr. $\frac{1}{100}$
Homatropine salts .	gr. $\frac{1}{120}$ to gr. $\frac{1}{20}$
Hyoscin. hyd. .	gr. $\frac{1}{250}$ to gr. $\frac{1}{120}$
Hyoscyamin. sulph. . .	gr. $\frac{1}{120}$
Morph. tart. gr. $\frac{1}{8}$ to gr. $\frac{1}{4}$ and atrop. sulph. .	gr. $\frac{1}{192}$ to gr. $\frac{1}{96}$
Nitroglycerinum	gr. $\frac{1}{240}$ to gr. $\frac{1}{60}$
Physostig. salic.	gr. $\frac{1}{120}$
Pilocarpin. nit. .	gr. $\frac{1}{4}$
Quinine salts .	gr. ss. to gr. ij.
Strychnine salts	gr. $\frac{1}{50}$ to gr. $\frac{1}{25}$

Injectio Curare Hypodermica Br.P.C.

Curare	gr. v.
Distilled water .	a sufficiency

Reduce the curare to powder in such a way as to prevent its coming in contact with the naked hand, and add the water to form a thin paste. Transfer to a small funnel plugged with absorbent wool, and gradually pour upon it distilled water until 1 fl. dr. is obtained.

Dose : 1 to 6 minims.

(B.P.C. is a 10 p.c. solution.)

Inj. Caffeinæ Hypodermica

(Martindale)

Caffeinæ . . .	℈j.
Sodii salicylatis .	gr. xviiss.
Aq. destillat. ad .	ʒj.

Dose : 1 to 6 minims = gr. $\frac{1}{3}$ to gr. ij.

Injectio Cantharidin. (Liebreich)

Cantharidin. . . .	gr. j.
Potassæ causticæ . .	gr. ij.
Aquæ destillat. .	ʒx. ʒiiiss.

Dissolve the cantharidin and potash in 2 dr. of water by heating, and dilute with the rest.

Each minim of the solution contains $\frac{1}{5000}$ gr. of cantharidin.

Dose : 8 to 16 minims for the treatment of lupus and other tuberculous affections.

If the soda salt of cantharidin is required, use caustic soda gr. iss.

Gelatin Injection

Used for aortic aneurism, and consists of a 1 to 2 per cent. solution of gelatin in 0·7 per cent. solution of sodium chloride. Must be made under strictly aseptic conditions, for which *see C. & D.*, 1906, II., 442, where the apparatus is illustrated.

Intramuscular Injections of Mercury.

The late Lieut.-Col. F. J. Lambkin, R.A.M.C., stated (*C. & D.* 1905, II., 806) that the following are used in army practice :—

Perchloride gr. xxxij., ammon. chlor. gr. xij., aq. ʒj.
♏x. every third day.

Sozoiodol hydrarg. gr. x., sodii iodid. gr. x., aq. ʒiij. ♏xx.
♏x.–xv. daily.

Calomel. gr. x., paraffin. liq. carbol. (2 p.c.) ʒss.
♏x. once a week.

Salicylat. hydrarg. 1 in 10 of ol. amygd.

Metallic mercury : hydrarg. ʒss., adip. lanæ ʒij., paraf. liq. carbol. (2 p.c.) ad fl. ʒv.
♏x. [= mercury 1 grain] once a week.

The last preparation has been called Lambkin's Cream or Grey Oil. The formula is now superseded by others, to which full reference is made in the Supplementary Chapter.

. Qu ninæ Hypoderm.

(Squire)

Quininæ hydratis .	gr. lxxvj.
Acid. lactic. . .	♏xxvij.
Aq. destill. ad .	ʒj.

Rub the qu ine with water ʒvj. and add just ough acid to dissolve it and form a neutral or faintly acid solution, and make up to 1 oz
♏iv. = quin. lact. gr. j.

This formula has more recently been superseded by a solution of quinine acid hydrobromide, which is soluble in six times its weight of water, the solution being preferred for hypodermic injection.

INSUFFLATIONES—SNUFFS

These compounds must be in extremely fine powder, free from grit, and not caked; therefore they should not be mixed in a mortar, but lightly blended on paper with a bone spatula, then passed through a sieve once or twice, using a brush for this purpose. The composition of insufflations enables them to adhere to the mucous membrane; a gum or gum-resin, dry powdered soap, and stearates are good adhesives. Alkaloidal stearates may be made by Zanardi's method, viz.:—

Morphine stearate: stearic acid, 5·68 grams; morphine, 5·72 grams. Dissolve the former in 100 c.c. of absolute alcohol by warming; to this solution add the morphine in small portions, when, on cooling, the morphine stearate crystallises out. On concentrating the mother-liquor a further portion of the salt may be obtained, which should be dried between 30° and 40° C.

Other alkaloidal stearates may be made in the same way by taking molecular proportions of stearic acid and pure alkaloid.

Insuff. Acid. Tannic., T.H.P.

Pulv. acid. tannic.	gr. ij.
Pulv. amyli	gr. ss.

Insuff. Adrenalin.

Adrenalin.	gr. ss.
(or dried suprarenal gland ℈v.)	
Pulv. acid. boric.	℈x.
Menthol.	℈ij.
Eucalyptol.	♏xx.
Lycopodii	ʒiss. ʒss.

Insuff. Ammon. Chloridi, T.H.P.

Pulv. ammon. chlor.	gr. ij.
Pulv. amyli	gr. ss.

Insuff. Bismuthi, T.H.P.

Bismuthi subnit.	gr. ij.
Pulv. amyli	gr. ss.

Insuff. Boracis, T.H.P.

Pulv. boracis	gr. iij.
Pulv. amyli	gr. ss.

Insuff. Iodoformi, T.H.P.

Pulv. iodoform.	gr. j.
Pulv. amyli	gr. ss.

For the ear this insufflation is made with equal parts of iodoform and subnitrate of bismuth.

Beehag's Snuff for Catarrh

[*Insuff. Mentholis, B.P.C.*]

(A) Menthol	ʒss.
(B) Ammon. chloridi	ʒiss.
(C) Pulv. acid. boric.	ʒj.

B.P.C. quantities are: A 5, B 45, C 50.

Ferrier's Snuff

(syn. *Pulv. Anticatarrhalis, N.F.; Pulv. Bismuthi Co., Martindale; Insuf. Bismuthi et Morphinæ, B.P.C.*)

Bismuth. subnitrat.	ʒvj.
Pulv. acaciæ	ʒij.
Morphinæ hydrochlor.	gr. ij.

From a quarter to a half of this quantity to be used in the course of twenty-four hours for cold in the head.

The formula originated by Dr. David Ferrier in 1876.

Cephalic or Headache Snuff

I

Menthol	gr. x.
Cocaine hydrochloride	gr. v.
Sugar of milk	ʒj.
Arrowroot	ʒvj.
Compound tragacanth powder	ʒj.

II

Powdered white hellebore	ʒj.
Powdered bayberry	ʒss.
Powdered orris	ʒss.
Powdered starch	ʒvj.
Oil of cloves	mx.

III

Fine table-salt	ʒj.
Dried sodium carbonate	ʒij.

The first of these snuffs is the best; the second somewhat resembles old-fashioned cephalic snuff; and the third is a good penny line for headache, neuralgia, and toothache.

Menthol-and-Cocaine Snuff

Cocainæ hydrochlor.	gr. x.
Pulv. camphoræ	gr. x.
Pulv. potass. chlorat.	ʒj.
Pulv. acid. boric.	ʒij.
Menthol.	ʒss.–ʒj.
Pulv. lycopodii	ʒj.

Insuf. Mentholis et Cocainæ, B.P.C., is menthol 2·5, cocaine hydrochlor. 0·15, ammonium chloride 25, camphor 5, and lycopodium to 100.

Jeroboam

Rad. rhei	℥j.
Fol. sennæ	ʒj.
Sem. cardamom.	ʒj.
Croci placent.	ʒij.
Cocci cacti	ʒvij.
Ol. anisi	ʒj.
Spt. tenuior.	Oiv.

Macerate seven days, strain, press, and filter, making up to four pints with proof spirit.

Dose: A teaspoonful to a tablespoonful.

Kelly's Paint

Comp. tincture of benzoin	ʒiss.
Glycerine	ʒj.
Collodion	ʒiij.

Kelly's Tonic

Tr. nucis vomicæ	ʒij.
Acid. nitro-mur. dil.	ʒiij.
Tr. cinchonæ co.	ʒiss.
Tr. gentianæ co.	ʒiij.

Dose: ʒij. in a wineglassful of water twice a day.

LACTES—MILKS

Lac Bismuthi

This is the trade-marked title of a preparation made by Messrs. Symes & Co., Ltd. A mixture with similar properties is prepared as follows:—

Bismuth subnitrate	gr. 800
Nitric acid, water, of each	ʒiij.

Dissolve and pour into a solution of

Caustic soda	ʒiiss.
Water	Cong. j.

stirring assiduously the while. Allow the precipitate to subside, and if the liquor is not distinctly alkaline add liq. sodæ until it is. Decant the clear liquor, and wash the precipitate several times by decantation. Transfer to a filter, and if the filtrate still gives the nitric reaction with ferrous sulphate and sulphuric acid, continue to wash the precipitate until the filtrate ceases to give the reaction. Transfer the precipitate to a mortar and add in their order the ingredients specified in the rest of the formula on p. 658.

Glycerine . . .	ʒij.
Chloroform-water . .	ʒv.
Triple orange-flower water	ʒiij.
Water to . . .	ʒxx.

Dose: A teaspoonful (= bism. subnit. gr. v.).

A preparation is also made from dry hydrated oxide of bismuth (*see* p. 579), 40 gr. to the ounce, in a mixture of mucilage of tragacanth and water (1 part and 3 parts); but it is not nearly so nice, medicinally or pharmaceutically, as the above. In it the bismuth is in an extremely fine powder, and only requires the glycerine to diffuse it.

Lac Bismuthi c. Cerio

To the alkaline solution in making lac bismuthi as above add a solution made by incinerating 180 gr. of cerium oxalate and dissolving the residue in ½ oz. of nitric acid. The soda solution should contain at least 3 oz. of the alkali.

Lac Citratis Bismuthi

Bismuthi subnitrat. . .	ʒij.
Acidi citrici . . .	ʒij.
Aquam ad . . .	ʒviij.

Lac Ferri Pyrophosphorici, D.A.V.

Sodium pyrophosphate .	ʒij.
Glycerine . . .	ʒv.
Solution of ferric chloride (10-per-cent.) . .	ʒiij.
Distilled water to . .	ʒc.

(All by weight.) Dissolve the soda salt in the glycerine and 2 pints of water, and dilute the iron solution with as much water. Mix the solutions and make up the weight of the mixture to 100 oz. with water.

Lac Magnesiæ

Magnes. sulph. . .	ʒxix.
Liq. potass . . .	q.s.
Aquæ	q.s.

Dissolve the magnes. sulph. in 2 pints of water, precipitate with liq. potassæ, wash the hydrate thoroughly, and diffuse in a sufficiency of water to make 20 oz.

The milk of magnesia of the Chas. H. Phillips Chemical Co., New York, was the subject of Letters Patent Nos. 72 and 1810 of 1874. To make 100 gals. dissolve magnesium sulphate 125 lbs. in distilled water 200 gals. and filter; then add ammonia solution (26·5 p.c. NH_3) 30 to 40 lbs.; allow to settle twenty-four hours, decant the clear liquor, and wash several times with warm water, finally making up to 100 gals. with distilled water. The B.P.C. article (*Mist. Magnesii Hydroxidi*) resembles the first formula, but also contains calcined magnesia.

Lac Magnesiæ, used on the Continent as an antidote in arsenical and phosphorus poisoning, as well as a laxative, is made by triturating 2 oz. of calcined magnesia with 10 oz. of water, boiling the mixture and dissolving in it 10 oz. of sugar, and when cold adding 5 oz. of orange-flower water. *Lac Magnesiæ Glycerinata* is the same, with 2 oz. of glycerine (by weight) instead of the sugar, and no flavouring. *See* Supplementary Chapter. *Magma Magnesiæ*, N.F. and C.F., is made with sodium hydroxide and magnesium sulphate.

Lamellæ Basis

(E. W. Lucas and B.P.C.)

Transparent gelatin .	ʒiij.
Glycerine . . .	ɱxv.
Distilled water . .	ʒij.

Used in making the B.P. lamellæ thus:—

Atropine sulph. sol. (1 p.c.) ɱxx., basis ℈iv.
Cocaine mur. ℈j., basis ʒiij.

Homatropinæ hydrobrom. gr. x., basis ʒiij.
Physostigmine sulphate gr. j., water ♏xx., basis ♑iv.

In each case dissolve the ingredients by a gentle heat and pour the 'melt' on to a waxed plate (covered with a piece of white paper) so as to produce a film exactly four inches square. When dry, but still supple, punch out discs ½-inch diameter.

Laudanum Liquidum Sydenhami

Take of Spanish wine 1 lb., opium 2 ozs., saffron 1 oz., and powdered cinnamon and cloves, of each, 1 dr. Infuse in a water bath for two or three days, and filter.—*From Dr. Thomas Sydenham's 'Opera Universa'* (1726).

This is the original of *Tr. Opii Crocata* of modern Pharmacopœias, all of which are made with a menstruum of alcohol and water. *Vinum Opii*, P.L., was the first formula without saffron. It was also known as *Tr. Thebaica*, P.L., and afterwards the 2 oz. of opium was changed to opium extract 1 oz., which formula was restored to the B.P., 1885 (*see* page 821). *Tr. Opii Crocata*, B.P.C., is opium and saffron of each 5, cinnamon and cloves of each 1, and detannated sherry to 100. The German Pharmacopœia formula is typical of the Continental preparations and contains opium 15, saffron 5, cloves 1, cassia 1, alcohol (68 p.c.) and water of each 75, by weight.

Lapis Divinus

(syn. *Blue Wound-stone; Cuprum Aluminatum, B.P.C.*)

Sulphate of copper . .	℥j.
Nitrate of potash . .	℥j.
Alum	℥j.

Powder and fuse in a crucible. When molten add

Camphor . . .	ʒss.

Mix and cast into sticks.

Lapis Miraculosus

(*Yellow Wound-stone*)

Alum. sulph. . . .	℥xvj.
Ferri sulph. . . .	℥xxiv.
Cupri sulph. . . .	℥xvj.
Ammon. mur. . . .	℥j.
Æruginis . . .	℥ij.

Mix and fuse.

LINCTUS—LINCTUSES

The linctus is an old-fashioned name given to thickish saccharine fluids intended to be slowly sipped and swallowed so as to relieve throat and bronchial affections.

Cough-linctus

Syr. rhœados . . .	Cong. j.
Syr. tolutani . . .	Cong. j.
Syr. papaveris . .	Oij.
Spt. chloroformi . .	Oiv.
Acid. sulphuric. dil. .	Oiv.
Morphinæ hydrochlorid. .	ʒiv.

M.S.A.

Dose: One teaspoonful three or four times a day; children of five to ten years, twenty drops occasionally.

P.F. 16

Vin. ipecac. . .	℥viij.
Spt. chloroformi . .	℥iv.
Oxymel. scillæ,	
Glycerini, aa. pt. æq. ad .	Oiv.
Theriacæ nig. . . .	lb. j.

P.F. 17

Tr. chlorof. et morph. ('85)	℥ij.
Vin. ipecac. . . .	℥ij.
Glycerini . . .	℥iss.
Syrupi scillæ . . .	℥iss.

Cap. ʒj. tussi urgente.

Cough-linctus for Adults

Liq. morph. hydrochlor.	ʒij.
Vin. antimon.	ʒij.
Vin. ipecac.	ʒij.
Syr. scillæ	ʒviij.
Syr. rhœados	ʒj.
Oxymel ad	ʒxxxvj.

Dose: ʒj. to be sipped three times a day and at bedtime.

Linctus Heroin., B.F.

(*Linctus Acetomorphinæ, B.P.C.*)

Heroin hydrochloride	gr. ij.
Tincture of hyoscyamus	ʒss.
Spirit of chloroform	ʒss.
Syrup of tolu, Syrup of Virginian prune bark, of each	ʒj.
Glycerine to	ʒvj.

Mix. (ʒj. = heroin hydrochloride gr. $\frac{1}{12}$, but B.P.C. is $\frac{1}{18}$ gr., *i.e.* gr. ix. in ʒxx.).

Dose: ʒss. to ʒij.

Some other linctuses in the B.P.C., and their sources, are:—

Codeinæ: Syr. codein. 50, ac. citr. 1·75, emuls. chlorof. 5, glycerin. 16·5, mucil. trag. ad 100.—*St. Thomas's Hosp. Phar.*

Ipecacuanhæ: Vin. ipec., syr. tolu., glycerin., mucil. trag. aa. 25.—*St. Thomas's Hosp. Phar.*

Opiatus: Ext. opii liq. 1, linct. scillæ 29.

Scillæ (syn. *Linctus, St. Thomas's Hosp. Phar.*; *Simple Linctus*): Oxymel. scillæ, mucil. trag., glycerin. aa. 25, emuls. chlorof. 5, syrup. ad 100.

Scillæ Co.: Tr. camph. co., oxymel. scillæ, syr. tolu., part. æqual. (This is *Linctus Tussis*, 'Sheffield Union Pharmacopœia.')

Sedativus: Liq. morph. mur. 5, emuls. chlorof. 5, succ. limon. 25, glycerin. ad 100. (This is *Linctus Morphinæ*, 'Sheffield Union Pharmacopœia,' which has spt. chlorof. instead of Emuls.)

Linctus Tolu., N.H.

Liq. morphinæ acetat.	♏xxiv.
Oxymellis scillæ	ʒiij.
Syr. tolutani	ʒv.

Dose: One teaspoonful.

Linseed Linctus

Ol. anisi	♏iv.
Tr. tolutanæ	ʒss.
Tr. senegæ	ʒss.
Chlorodyni	♏xlv.
Oxymel. scillæ	ʒiss.
Inf. lini ad	ʒiij.

Dissolve the oil in the mixed tinctures; add inf. lini ½ oz. and the rest of the ingredients.

Dose: ʒj. thrice daily.

LINIMENTA—LINIMENTS

A B C Liniment

(*Aconite, Belladonna, and Chloroform*)

I. Clear

Camphor	ʒss.
Chloroform	ʒiiss.
Liniment of aconite	ʒv.
Liniment of belladonna	ʒv.
Glycerine	ʒij.

Dissolve and mix.

This is a modification of the ordinary by Mr. T. Maben, and it has since appeared in several books as the original. This error should be noted.

II. Ordinary

Lin. aconiti	ʒij.
Lin. belladonnæ	ʒij.
Lin. chloroformi	ʒij.

Some physicians prefer pure chloroform to lin. chloroformi, and *Lin. Aconiti Co.*, B.P.C., adopts this preference, using chloroform ʒj. in place of liniment ʒij. The product is also clear.

Linimentum Album, or White Oils, is one of the most popular English liniments. Originally, as 'white oils,' or

'egg oils,' it was used exclusively for veterinary purposes, and that so effectually that it came to be used 'for man and beast.' A large number of formulas exist for it, and we have only attempted here to give a selection to show the evolution of the preparation. *Linimentum album*, P.L., was a mixture of olive oil ℥iij., spermaceti ʒvj., and white wax ʒij.—*i.e.*, the forerunner of ung. cetacei. This formula was still in vogue under the same name in Gray's day (Supplement, ed. v., 1831), but by the time Redwood's third edition of Gray was published (1857) lin. album had disappeared from the book, and *egg oils*, an embrocation for sprains, had arrived. *See* No. I, p. 662. Before this ('P.J.,' June, 1848) Jacob Bell had said, 'We have seen a compound ordered in veterinary practice something like the following : ℞. The yolks of two eggs; 3 oz. solution of ammonia; 1 oz. oil of origanum; 4 oz. oil of turpentine; a pint of vinegar. M. s.a.' At the present time Elliman's Embrocation is the most popular liniment, and its popularity has undoubtedly assisted in creating the demand for liniments of the same character. Its essential ingredients are eggs, turpentine, and acetic acid, but all published formulas and analyses of 'Elliman' singularly fail in hitting the secret of this preparation. The first of the formulas which follow gives an embrocation lacking 'grip' on account of its thinness, which is that of new milk. By doubling the turpentine, and making the acetum 'ad Oj.,' a better preparation is obtained. The second formula shows the introduction of the unscientific method—viz., combination of an alkali and a soap with an acid. The same obtains in No. III., which is a working improvement on a formula originally published in *The Chemist and Druggist Diary*, 1883, but in use for many years before that. Some chemists insist that both ammonia and acetic acid must be in the 'oils.' No. IV. is an improvement upon No. I. : it is thicker and better for massaging. No. V. is a type of many supermedicated white liniments—liniments of aconite and belladonna, hazeline, spirit of nitre, laudanum, and many other things take the place of arnica, and they do no harm. Whether they do good is another story. Lastly, we have the true ammonia type of liniment, and there

are as many modifications of it as of the acetic. 'Linimentum album' of the 'National Formulary' and B.P.C. is a synonym for Stokes's liniment (*see* p. 666).

I. Gray's

Two eggs.
Spirit of turpentine . . ℥iss.
Goulard's extract . . ℥ss.
Mix and add gradually
Vinegar . . . . ℥xxiv.
Rectified spirit . . ℥iss.

II. Jacob Bell's

Ol. terebinth. rect. . . ℥ij.
Liq. ammoniæ . . ℥ij.
Lin. saponis . . . ℥iij.
Spt. rosmarini . . ℥j.
Aceti destillati . . ℥viij.

The ingredients to be mixed in the above order, adding the vinegar gradually and with constant agitation.

III

Eggs . . . . xij.
Soft soap . . . ℥vj.
Oil of turpentine . . ℥xx.
Strong solution of ammonia . . . . ℥v.
Acetic acid . . . ℥iv.
Camphor . . . ℥vj.
Spirit . . . . ℥viij.
Oil of amber or origanum ℥iv.
Water to . . . Oiv.

Rub up the soap with 10 oz. of water, added gradually so as to produce a smooth jelly; then mix the eggs, previously switched, with this; next the spirit with the camphor dissolved in it. Mix the turpentine and oil of amber, add gradually to the egg mixture, stirring assiduously all the while and aiding emulsification by the addition of a little water occasionally; then add the ammonia solution, and when incorporated pour the mixture into a Winchester quart bottle, and having ascertained how much it measures add the acetic acid mixed with as much water as will make the whole measure 80 oz.

IV

Oil of turpentine . . ℥iss.
Camphorated oil . . ℥ij.
Acetic acid . . . ℥j.
Yolk of one egg.
Water . . . . ℥vj.

To the yolk of egg add the mixed oils gradually, so that a thorough emulsion may be made; then add 4 oz. of water carefully with constant stirring, and finally the acid diluted with 2 oz. of water.

V

Yolk of one egg.
Camphor . . . ℥j.
Acetic acid . . . ℥iss.
Oil of turpentine . . ℥viij.
Nut oil . . . . ℥iv.
Oil of amber . . . ℥j.
Distilled water . . ℥ivss.

Mix the egg-yolk, acetic acid, and water together. Dissolve the camphor in the turpentine, add the other oils, then the egg mixture, and shake until a perfect emulsion is obtained.

VI

Acid. oleic. . . . ℥j.
Ol. terebinth. . . . ℥ix.
Liq. ammoniæ . . ℥iij.
Liq. potassæ . . . ℥iss.
Aq. ad . . . . ℥xx.

Mix thoroughly by agitation in a 40-oz. bottle.

Besides these, kindred formulas will be found by other names under Embrocations. There is a formula for every week in the year given in the supplementary volume, their nature being ammoniacal, ammonio-acetic, aceto-terebinthinous, aceto-camphor-terebinthinous, and one or other of these with

fixed oils or lead. The following table is a concise synopsis of good formulas used by retailers in Great Britain :—

—	A	B	C	D	E	F	G	H
Acidi acetici . .	℥xv.	℥ix.	℥iss.	℥v.	℥xv.	℥j.	℥iv.	℥xvj.
Camphoræ . .	℥j.	—	—	℥ij.	—	—	—	℥iv.
Liq. plumb. subacet. .	—	—	℥x.	—	—	—	—	—
Ol. eucalypti . .	℥ij.	—	—	—	—	—	—	—
Ol. origani . .	—	℥ss.	—	—	—	—	—	—
Ol. succini . .	—	℥ss.	—	—	—	—	—	—
Ol. terebinthinæ .	℥xv.	℥vj.	℥ij.	℥xx.	℥xv.	℥iss.	℥iv.	℥xlviij.
Ova	iij.	vj.	ij.	ij.	iij.	j.	j.	x.
S.V.M. . . .	℥iij.	—	℥x.	—	—	—	—	—
Tr. capsici . .	℥j.	—	—	—	—	—	—	—
Aq.	—	℥ix.	℥viiss.	℥xxiv.	—	℥vj.	℥iv.	℥xlviij.

Add naphtha ℥ix. to B, lin. camph. ℥ij. to F, ol. rosmar. ℥iss. to G, and ol. limonis ℥ss. to H.

Liniment. Æruginis, P.L.

Verdigris (in powder) . ℥j.
Vinegar . . . . ℥vij.
Clarified honey . . ℥xiv.

Dissolve the verdigris in the vinegar, strain, add the honey, and boil to a proper [pourable] consistence.

Powell's English translation (1815) of the London Pharmacopœia 1809, gives the synonyms: 'Oxymel æruginis, P.L. 1787. Mel Ægyptiacum, P.L. 1745. Unguentum Ægyptiacum, P.L. 1720.' A footnote is: 'This preparation, as being only intended for external use, has been transferred to its present situation'—*i.e.*, removed from the oxymels. Powell's years should be 1788, 1746, and 1721.

Lin. Ammonii Iodidi, C.F.

Liq. ammoniæ fort. . ℥v.
Tr. iodi . . . . ℥v.
Glycerini . . . ℥v.
Spt. camphoræ . . ℥v.

The slight deposit formed after decolorisation may be separated by filtration.

Liniment. Amyli Hydridi
(Dr. Bennet, of Buxton)

Ol. ricini . . . ℥j.
Cocainæ hydrochlor. . ℈j.
Menthol. . . . ℥j.
Chloral. hydrat. . . ℥j.
Amyl. hydrid. . . ℥ij.
Spt. rectificat. ad . . ℥ij.

Bronchial Liniment

Tr. opii . . . . ℥j.
Lin. aconiti . . . ℥j.
Lin. belladon. . . ℥j.
Lin. camph. co. . . ℥ij.
Lin. saponis ad . ℥viij.

Bronchitis-liniment

Lin. saponis . . . ℥vj.
Tr. opii . . . . ℥iij.
Liq. ammon. fortioris . ℥j.

Arnica Opodeldoc

Tr. opii . . . ℥j.
Tr. arnicæ . . . ℥ij.
Lin. saponis ad . . ℥iss.

Liniment. Arnicæ
(For Bruises, Sprains, Chilblains, Stings of Insects, &c.)

Flor. arnicæ . . . ℥vj.
Fol. tabaci . . . ℥j.
Lin. camph. co. . . ℥xij.
Lin. saponis . . . ℥xij.

Macerate for seven days; filter.

Lin. Arnicæ, B.P.C. (*syn.* Arnica Opodeldoc), is hard soap 20, tincture of arnica 25, camphor 5, alcohol to 100.

Liniment. Capsici

(syn. *Tr. Capsici Fort.*, *B.P.C.*; *Dr. Turnbull's Tincture*)

Capsicum-fruit in No. 40 powder	ʒx.
Rectified spirit	a sufficiency

Make 30 oz. of tincture by maceration and percolation.

Lin. Capsici, B.P.C., is 35 of above, oleic acid 12·5, oil of lavender 0·62, and alcohol to 100.

Lin. Capsici Co. B.P.C., is after the Austrian Pharmacopœia, viz.: Piper. nig., capsic. aa. 10, sapo. dur., camphor. aa. 2·5, ol. rosmar., lavand., caryoph. aa. 0·52, ol. cinnam. 0·1, liq. ammon. 20, alcohol ad 100.

Congreve's Liniments

(Milder)

Lin. saponis co.	ʒiiiss.
Lin. camph. co.	ʒiiiss.
Tr. belladonnæ	ʒiiiss.
Ol. cajuput.	ʒiss.

(Stronger)

Liq. ammon. fort.	ʒss.
Tr. belladonnæ	ʒss.
Spt. camphoræ	ʒss.
Ol. terebinthinæ	ʒss.

Sig.: Use as directed.

Lady Ford's Liniment

(For Rheumatism in the Head)

One egg.	
Spirit of camphor	ʒss.
Oil of turpentine	ʒj.
Vinegar to	ʒxij.

Mix as Lin. Album No. 1, p. 662.

To be rubbed behind the ears and the neck.

Household Liniment

Lin. ammoniæ	ʒviij.
Ol. terebinthinæ	ʒiij.
Oleo-resinæ capsici	ʒij.
Aquam ad	ʒxvj.

Lin. Hydrargyri

(Finnemore's non-separating).

Mercury ointment	ʒj.
Solution of ammonia	ʒv.
Liniment of camphor	ʒxv.

Mix the solution with the liniment, and triturate the ointment with the mixture.

Huile de Cade Liniment

(For Psoriasis)

Ol. cadin.	ʒv.
Glycer. amyli, B.P. 1867	ʒv.
Saponis mollis	ʒvj.
Ol. citronellæ	q.s.

Rub the oil and soap together until thoroughly mixed. Transfer to another mortar containing the glycerine and rub slowly until smooth. Then add the perfume.

Kerosene Liniment

(Dr. A. C. Hobbs).

Kerosene	ʒij.
Tr. opii	ʒiv.
Tr. arnicæ	ʒv.
Tr. stramon.	ʒiv.
Spt. amm. arom.	ʒvj.
Spt. camphor.	ʒv.
Ol. origani	ʒiv.
Chloroform.	ʒiij.

Rub in twice during the twenty-four hours, or when required.

For sprains, bruises, and nervine pains.

Leslie's Magic Liniment

Lin. aconiti	ʒss.
Lin. belladonnæ	ʒss.
Lin. saponis	ʒss.
Tr. opii	ʒss.

For muscular pains, neuralgia, &c.

Magnetic Liniment

Ol. terebinth.	ʒix.
Tr. capsici	ʒxij.
Spt. camphor.	ʒxcvj.
Liq. ammon. fort.	ʒix.
Spt. rectificat.	ʒxviij.
Ol. sassafras	ʒss.

A good speciality liniment.

Liniment. Mentholis
(Martindale)

Menthol.	℥iij.
Chloroform.	℥ss.
Spt. rectificat. ad	℥ij.

B.P.C. has menthol 2, chloroform $2\frac{1}{2}$, olive oil $5\frac{1}{2}$, which is a modification of C.F.

Menthol Opodeldoc

Sapon. mollis	gr. xx.
Camphor.	gr. viij.
Menthol.	gr. ij.
Aq. destil.	℥ij.
Tr. arnicæ ad	℥j.

Macerate for a day, then filter.

Liniment. Menthol. Co., C.F.

Menthol.	℥j.
Lin. ammonii iodidi, C.F.	℥xxxix.

M. et solve.

Lin. Methylis Salicylatis, B.P.C.
(*Lin. Betulæ Co.*)

Menthol 5, oil of eucalyptus 10, essential oil of camphor 25, methyl salicylate to 100.

Linimentum Opii Ammoniatum, Br.P.C. and B.P.C.

Soap liniment	℥vj.
Ammoniated camphor liniment	℥vj.
Tincture of opium	℥vj.
Belladonna liniment	℥j.
Stronger solution of ammonia	℥j.

Mix, allow to stand for a week, and filter quickly.

(Scotch Formula)

Opium	℥iiss.
Soap	℥iss.
Compound camphor liniment	℥xx.

Macerate for a week and filter.

The liniment contains very little morphine, because the alkaloid is insoluble in ammonia. The marc is therefore valuable, and the precipitate filtered out in the first formula is crude morphine.

'Dr. Bow's Liniment' is registered as a trade-mark, No. 158,053 (1891), and the preparation is a proprietary article.

Linimentum Nigrum

Rectified spirit	℥ij.
Tincture of arnica	℥ij.
Oil of tar	℥ij.
British oils	℥ij.

Mix, and add with great caution and constant agitation

Sulphuric acid	℥ss.

Lin. Opii Compositum, N.F.
(syn. *Canada Liniment*)

Tincture of opium	℥iss.
Camphor	℥ij.
Alcohol (95-per-cent.)	℥iv.
Oil of peppermint	℥iij.
Solution of ammonia	℥vj.
Oil of turpentine to	℥xvj.

Dissolve the camphor and oil of peppermint in the spirit, then add the tincture of opium, ammonia, and oil of turpentine.

This liniment separates into two portions a short time after it has been mixed. It may be made somewhat more permanent by adding tincture of quillaia ℥iij. to the ammonia solution before adding the latter to the mixture.

Linimentum Picis
(Lassar's)

Ol. picis lig.	℥iv.
Ol. rusci	℥iv.
Ol. olivæ	℥j.
Spt. tenuior.	℥j.

Lin. Plumbi Lactatis

Cremor. lactis.	℥xvj.
Acid. salicylic.	℥ss.
Liq. plumbi subacet.	℥ij.

Linimentum Potassii Iodidi
(H. W. Jones and B.P.C.)

Soft soap	℥ij.
Potassium iodide	℥iss.
Glycerine	℥j.
Oil of lemon	℥j.
Alcohol (60-per-cent.)	℥x.

Dissolve the soap, preferably by

a gentle heat, in the mixture of alcohol, glycerine, and essential oil; add the iodide of potassium, and shake until dissolved. Decant or filter, if necessary, after standing a few hours.

The B.P.C. quantities are varied from the original to adapt the formula to its centesimal system.

Rheumatic Liniment
P.F. 4

Liq. ammon. fort.	℥iij.
Ol. terebinthinæ	℥j.

Not to be applied to delicate skins.

Rheumatic and Neuralgic Liniment

Mentholis	gr. x.
Chloroform. (meth.)	℥j.
Lin. belladonnæ (meth.)	℥ij.
Lin. saponis (meth.) ad	℥j.

Liniment. Roseni

Ol. myristicæ express.	℥ss.
Ol. caryophylli	℥ss.
Spt. juniperi	℥x.

Mix the oils and add the spirit gradually to make a uniform mixture.

Liniment. Scopolæ

Prepared from scopola rhizome in the same manner as lin. belladonnæ, B.P.

Opodeldoc (Solid)

(syn. *Lin. Saponato-camphoratum, N.F.*)

White Castile soap, dried	2½ tr. oz.
Camphor	¾ tr. oz.
Alcohol (95-per-cent.)	30 fl. oz.
Oil of thyme	45 mins.
Oil of rosemary	90 mins.
Strong solution of ammonia (s.g. 0·897)	1⅝ fl. oz.

Heat gently the Castile soap, camphor, and alcohol in a flask until the solids are dissolved. Filter while hot into another flask; warm again, if necessary, to liquefy; add the oils and strong ammonia, thoroughly mix, and pour into small dry phials, previously warmed. Immediately cork and cool.

NOTE. — Solid opodeldoc is ordered by the German Pharmacopœia to be prepared with curd or stearin soap. This preparation resembles Steers's, and is the opodeldoc universally used on the Continent. The above quantity is sufficient for '18 to 20 vials.'

Stokes's Liniments.—The late Dr. Stokes, of Dublin, whose name is indelibly associated with medicine in connection with the peculiar breathing known as Cheyne-Stokes respiration, was the originator of two liniments which the Board of Customs and Excise treat as 'known, admitted, and approved' remedies. The original prescriptions are—

I

Stokes's Chest-liniment

Morphiæ acet.	gr. vj.
Chloroform. puri	℥j.
Lin. saponis ad	℥iij.

M. Ft. lin. venena.

To be rubbed into the chest, back and front, every night.

II

Stokes's Rheumatic Liniment

Ol. terebinthinæ	℥iss.
Acid. acetic.	℥iss.
Ovi vitell.	unius
Olei limonis	℈j.
Aquam rosæ ad	℥viij.

M. Ft. lin.

To be rubbed into affected joints.

The second formula closely resembles the liniment generally known as St. John Long's liniment, which is given, with 'linimentum album' and 'Stokes's liniment,' as a synonym for *Lin. Terebinth. Acet., N.F.* The B.P.C. copies this as *Lin. Album*, with *Egg Liniment* as a synonym and variants of the quantities to suit its centesimal system, being like No. III. without rose-water but with yolk and white of egg.

III. (Beasley's)

Oil of turpentine	ʒiij.
Acetic acid	ʒv.
Rose-water	ʒiiss.
Essence of lemon	ʒj. ɱxx.
Yolk of an egg.	

Mix.

IV

(Used in the North of Ireland)

Turpentine	ʒv.
Acetic acid	ʒv.
Yolk of one egg.	

Mix thoroughly.

It will be seen that No. II. and No. III. differ materially. Lin. terebinth. acetic., B.P. is an imitation of St. John Long's liniment, but the custom of giving No. III. for it has not broken down yet.

Linim. Succini

I

Camphoræ	ʒiij.
Ol. caryoph.	ʒj.
Ol. succin. rect.	ʒiij.
Ol. olivæ opt.	ʒxx.
Liq. ammon. fort.	ʒiss.
Aquæ	ʒxv.

Digest the camphor in the essential oils until dissolved, then add the olive oil, shake well, add the ammonia, and, lastly, the water, shaking well together.

A cream-coloured 'white liniment' for whooping-cough and chest-complaints generally. Also a good 'rubbing-bottle' for sprains, rheumatism, and the like.

II. (Squire's)

Ol. succini	ʒj.
Spt. camphoræ	ʒj.
Liq. vol. c.c.	ʒj.

Lin. Succini Co., B.P.C.

Oils of amber and cloves 25 each, and olive oil 50. [This is Roche's Embrocation imitation, p. 601.]

Liniment. Stimulans

(For Lumbago, Rheumatism, &c.)

Ether	ʒj.
Liniment of belladonna	ʒss.
Tincture of capsicum to	ʒij.

Mix.

Directions.—To be well rubbed into the painful parts night and morning.

Liniment. Whitworth.

(syn. *Whitworth's Drops; Whitworth's Red Rub; Red Bottle*)

Rectified spirit	ʒij.
Comp. tinct. of lavender	ʒj.
Oil of origanum	ʒij.

Mix.

The formula used in the neighbourhood of Whitworth, Lancashire, is

Camphoræ	ʒvj.
Ol. origani	ʒvj.
Rad. anchusæ	ʒj.
Spt. meth. ad	Oiv.

Macerate a few days and filter.

Another Lancashire formula :

Camphor. . . .	ʒij.
Tr. lavand. co. . .	ʒj.
Ol. origani . . .	ʒss.
S.V.M. ad . . .	Oj.

M.

A formula containing brandy :

Ol. origani . . .	ʒj.
Pulv. cocci cacti . .	q.s.
Spt. vini gallici . .	Oj.

Macerate for a few days and filter.

The following was communicated to the *C. & D. Diary*, 1905 :—

Ol. origani pal. . .	mXL.
Spt. camphoræ . .	ʒiss.
Tr. cardamomi co. . .	ʒiv.

Misce.

Dose as an antispasmodic : Ten to thirty drops.

If tr. lavand. co. ʒj. be substituted for tr. card. co., it will be a recipe for the Whitworth or Red Bottle for cuts, bruises, sores, and healing-purposes generally.

NOTE.—Methylated spirit may not be used by licensed retailers thereof without express authority of the Excise.

LIQUORES—SOLUTIONS

Liquor Acidi Phosphorici Comp., ex-N.F.

(*Solution of Acid Phosphates*)

Bone ash (in fine powder) . .	1,000 grams
Sulphuric acid (s.g. 1·830) . . .	780 grams
Water . . .	4,000 c.c.

Mix the bone ash with a litre of water, add the sulphuric acid, diluted with 2 litres of water, and mix thoroughly with a porcelain or glass stirrer. Now add the remainder of the water and set the mixture aside for twenty-four hours, stirring occasionally. Then transfer the mixture to a strong cotton strainer and subject to a gradual pressure (avoiding contact with metals) so as to express as much of the liquid as possible. Lastly filter through paper.

The specific gravity of this solution is about 1·113 at 15° C. (59° F.).

Liquor Aluminii Acetatis, N.F.

(syn. *Burow's Solution*)

Aluminium sulphate, crystallised . .	300 grams
Acetic acid (U.S.P.) .	300 grams
Calcium carbonate .	130 grams
Water . . .	1,000 c.c.

Dissolve the calcium carbonate in the acetic acid mixed with 200 c.c. of water, and the sulphate of aluminium in 800 c.c. of water. Mix the two solutions and allow the mixture to stand for twenty-four hours, agitating occasionally ; pour off the clear solution and filter.

Ph.G. is alum. sulphat. 100, calc. carb. 46, acet. acid (30 p.c.) 120, water to make solution of sp. gr. 1·044-1·048.

Liq. Ammon. Anisatus, Ph.G.

Oil of anise .	by weight 1 part
Alcohol (90-per-cent.)	by weight 24 parts

Dissolve and add

Solution of ammonia (10 per cent.)	by weight 5 parts

Liquor Anthracis Simp.

Coal tar	ʒiij.
Benzol	ʒvj.
Rectified spirit . .	ʒvj.

Mix and heat at 35° C. for twenty minutes ; then add

Potassium sulphide . .	ʒiss.
Soda solution (15-per-cent.)	ʒiss.
Rectified spirit . .	ʒvj.

All by weight.

Again heat for twenty minutes and set aside for a week; then decant the clear liquor.

Liq. Anthracis Co.

Resorcin	ʒiij.
Salicylic acid	ʒv.

To be added to the alkaline liquor in the preceding formula.

Liquor Antisepticus, C.F.
(U.S.P. 1905)

Boric acid	20 grams
Benzoic acid	1 gram
Thymol	1 gram
Eucalyptol	0·25 c.c.
Oil of peppermint	0·50 c.c.
Oil of gaultheria	0·25 c.c.
Oil of thyme	0·10 c.c.
Alcohc (95-per-cent.)	250 c.c.
Purified talc	20 grams
Water to	1,000 c.c.

Dissolve the boric acid in 750 c.c. of water and the benzoic acid in 150 c.c. of alcohol, and pour the aqueous solution into the alcoholic solution. Then dissolve, in a mortar, the thymol in the eucalyptol and oils of peppermint, gaultheria, and thyme; thoroughly incorporate the purified talc, and add, with constant trituration, to the solution first prepared. Allow the mixture to stand, with occasional agitation, during forty-eight hours, filter, add 100 c.c. of alcohol to the clear filtrate, and a sufficient quantity of water to make the finished product measure 1,000 c.c.

Liq. Antisepticus Alkalinus, C.F.
(N.F. 1906)

Potassium bicarbonate	32 grams
Sodium benzoate	32 grams
Sodium biborate	8 grams
Thymol	0·2 gram
Eucalyptol	0·2 c.c.
Oil of peppermint	0·2 c.c.
Oil of gaultheria	0·4 c.c.
Tincture of cudbear	16 c.c.
Alcohol (95-per-cent.)	62·5 c.c.
Glycerine	250 c.c.
Purified talc	10 grams
Water to	1,000 c.c.

Dissolve the salts in 575 c.c. of water, and the thymol, eucalyptol, and oils in the alcohol, proceeding substantially as for liquor antisepticus. N.F. gives 60 c.c. of tincture of cudbear.

Liq. Arsenii Bromidi, ex-N.F.
(syn. *Liq. Potass. Arseniat. et Bromidi; Clemens' Solution*)

Arsenious acid	10 grams or ʒiiss.
Potassium bicarbonate	10 grams or ʒiiss.
Bromine	15·5 grams or ʒiiiss. gr. xxiij.
Water to	1,000 c.c. or ʒxxxiv.

Dissolve the acid and bicarbonate in an eighth of the water by boiling, add three-fourths of the water and the bromine, and make up to the required volume. After a few hours filter.

Contains 1 per cent. of arsenious acid.

Dose: 1 to 5 minims.

Liq. Auri et Arseni Bromidi
N.F. and C.F.

Arsenious acid	2·5 grams
Tribromide of gold	3·25 grams
Bromine-water	a sufficiency
Distilled water	a sufficiency

Dissolve the arsenious acid in 125 c.c. of bromine-water by heat; when the bromine colour has disappeared add more bromine-water, 20 to 30 drops at a time, until it ceases to be absorbed. Then heat in an evaporating-dish to dispel excess of bromine, make up to 900 c.c. with water, and dissolve the tribromide of gold in enough distilled water to make the mixture measure 1,000 c.c.

R. Wright and B.P.C.

Arsenious acid (in powder)	40 gr.
Potassium carbonate	40 gr.
Bromine	100 gr.
Gold (in leaf)	13 gr.
Distilled water to	1 pint

Place the arsenious acid and potassium carbonate with 4 oz. of the water in a flask, and boil until solution is complete. Weigh out the gold leaf and place in a wide-mouthed bottle, add 12 oz. of distilled water, then run in the bromine, and shake until the latter is dissolved. Add the solution previously made and shake for a few seconds. Transfer to a flask or retort, and boil until bromine fumes cease to be given off. Allow to cool, dilute with distilled water to 1 pint; filter.

Liquor Bismuthi

(Cowley and Catford's Formula)

Subnitrate of bismuth .	70 grams
Citric acid . . .	50 grams
Nitric acid . . .	50 c.c.
Potassium bicarbonate .	103 grams
Solution of ammonia and distilled water, of each a sufficiency	

Heat the subnitrate with the nitric acid until dissolved, add the citric acid dissolved in 1 oz. of hot water. Add gradually the bicarbonate dissolved in 3 oz. of water, stirring well. Dilute with hot water to 1 litre, cool, collect the precipitate on a filter, and wash free from nitrate. Pour upon the filter a mixture of liquor ammoniæ 60 c.c. and water 140 c.c., returning the filtrate until the whole of the precipitate is dissolved. Make up to 1 litre.

NOTE.—The above gives a solution of B.P. strength. A solution more resembling Schacht's is obtained by adding to 20 oz. of it liquor. ammon. cit. fort. ʒvj., aq. destil. ʒviij.

Liq. Bism. Conc., Br.P.C., is made similarly. Quantities: Bism. subnit. 1 oz., ac. nit. 5 oz., ac. cit. 5 oz., sod. bicarb. 8¾ oz., liq. amm. 6 oz., liq. amm. cit. 12 oz., aq. q.s. Product, 50 oz.

Liquor Bismuthi Co.

(syn. *Mist. Bismuthi Co.*)

Liq. bismuthi (B.P. 1867)	ʒxvj.
Spt. chloroformi . .	ʒiv.
Tr. nucis vomicæ . .	ʒij.
Acid. hydrocyan. dil. .	ʒiv.
Tr. cardam. co. . .	ʒiv.
Morphinæ hydrochlor. .	gr. iv.

M.

Dose: A teaspoonful.

If B.P. 1885 liq. bismuthi is used, 2 oz. of the distilled water in it should be replaced by liq. ammon. cit.

Mist. Bismuthi Co., Br.P.C., contains morph. mur. gr. viij., tr. card. co. ʒiij., chloroform. ♏70 ext. nuc. vom. liq. ♏135, ac. hydrocy. dil. ♏320, liq. bism. conc. ʒxv., and aq. dest. ad ʒxx. Dose: 20 to 30 minims. (*See also* p. 690.)

Liquor Bismuthi Co. c. Pepsin.

Pepsin. (in scales) . .	ʒiij.
Liq. bismuthi co. . .	ʒxx.

Dissolve and filter.

The following is also good if made with liq. bismuthi, 1867. Otherwise omit the hydrochloric acid, dissolve the pepsin in the water, mix with the rest of the ingredients, and filter after four days:—

Pepsin.	ʒiij.
Acid. hydrochlor. dil. .	ʒiij.
Acid. hydrocyan. dil. .	ʒss.
Ext. opii liq. . . .	ʒj.
Spt. chloroform. . .	ʒij.
Tr. nucis vom. . .	ʒij.
Liq. bismuthi . . .	ʒx.
Liq. cocci . . .	q.s.
Aq. ad	ʒxx.

Digest the pepsin with ac. hydrochlor. and aq. ʒiv. for two days; decant the clear portion, which reserve; filter the remainder, wash

with water until the filtrate and reserved portion measure ʒv. Add the liq. bism. and sufficient cochineal to colour, then the rest of the ingredients, and water to the required volume. Set aside for four days, and, if necessary, filter.

Such preparations are better when made with bismuth tartrate. (*See* Supplementary Chapter, p. 897.)

Liq. Boracis Co.

(syn. *Liq. Sod. Borat. Co., N.F.; Dobell's Solution, also in B.P.C.*)

Borax	ʒij.
Bicarbonate of sodium	ʒij.
Carbolic acid	gr. xxiv.
Glycerine	ʒss.
Water to	ʒxvj.

Dissolve the salts in half the water and the acid in the glycerine, mix the solutions, make up to 16 oz. with water, and filter.

C. F. prescribes the same strength, but with only 26 grains of carbolic acid in 20 oz.

Liquor Bromi, N.F.

(syn. *Smith's Solution of Bromine*)

Bromine	ʒvj.
Potassium bromide	ʒiij.
Water	ʒiij.

Dissolve the bromide in the water, add the bromine, and shake until dissolved.

Liq. Bromi Fort., B.P.C., is bromine 35, potassium bromide 54, water to 100.

Liquor Bromidi Compositus, B.F.

Chloral hydrate	gr. xcvj.
Potassium bromide	gr. xcvj.
Extract of henbane	gr. j.
Extract of Indian hemp	gr. j.
Extract of liquorice	gr. ix.
Oil of orange-peel	♏j.
Distilled water to	ʒj.

Mix and allow to settle, then filter.

Dose: ʒss. to ʒj.

Liquor Calcis Sulphuratæ, N.F.

(*Vleminckx's or Vlemmingk's Solution*)

Slaked lime	ʒv.
Sublimed sulphur	ʒviij.
Water	ʒlvj.

Add the mixed powders to the water, boil down to 32 oz., strain, and bottle. Decant as required.

B.P.C. is quicklime 2, sulphur 5, and water to 100.

Liquor Carmini

N.F.

Carmine	ʒij.
Solution of ammonia	ʒxij.
Glycerine	ʒxij.
Water to	ʒxxxij.

Triturate the carmine with the ammonia, add the glycerine, mix thoroughly, and heat the mixture on a water-bath until free from the odour of ammonia. Cool and add water to 32 oz.

A. Ph. F.

Carmini gr. xx., liq. ammon. fort. ♏xx., glycerini ʒj., alcohol. (90-per-cent.) ʒj., aq. ad ʒj. Dissolve carmine in the water and ammonia, filter, and add the other ingredients.

C.F. and B.P.C.

Carmine	1 oz. 87 gr.
Solution of ammonia	7 oz.
[B.P.C., potassium citrate	2 oz.
Glycerine	7 oz.
Water to	20 oz.

Prepare in the N.F. manner.

Liq. Bromo-chloral Co.

See p. 561.

Liq. Caulophylli et Pulsatillæ

Caulophyllum-root (blue cohosh)	ʒx.
Pulsatilla	ʒx.
Rectified spirit	a sufficiency
Water	a sufficiency

Macerate the coarsely ground drugs in 3 pints of rectified spirit for forty-eight hours and transfer to a percolator. Reserve the first 12 oz. of percolate and continue

percolation with 3 pints of water. Recover the spirit from this percolate and evaporate to 8 oz. Mix this with the reserved portion, acidify with dilute sulphuric acid ʒss., set aside for a day, and filter.

Liq. Caulophyl. et Puls. Co. B.P.C., differs, and contains also aletris, blackhaw, and glycerine.

Liquor Copaibæ Solubilis

Copaiba	ʒxx.
Solution of potash . .	ʒxxx.
Water	ʒx.

Boil the copaiba and solution of potash for an hour, add the water, and mix thoroughly. Set aside until cold and well separated, draw off the clear liquor from the upper oily portion and sediment, and evaporate it to 38 oz.; to this add 2 oz. of solution of potash.

This formula is adopted in the A.Ph.F. and B.P.C. (with kieselguhr).

Franks's Specific

Liq. copaibæ sol. . .	ʒv.
Spt. æther. nit. . .	ʒj.

Liq. Copaibæ, Buchu, et Cubebæ

I. [B.P.C.]

Ext. buchu liquid. . .	ʒij.
Ext. cubebæ liquid. .	ʒij.
Liq. copaibæ sol. . .	ʒxvj.

II

Cubebs	ʒiv.
Rectified spirit . .	ʒxvj.

Macerate six days, then add

Solution of potash . .	ʒiv.

Continue maceration for a day, filter, and add

Soluble copaiba . .	ʒxv.
Conc. infusion of buchu (1-3)	ʒxvj.

Allow to stand for three days, and filter through a wetted filter-paper. If not bright, add some mag. carb. lev. and again filter.

Liq. Copaibæ, Buchu, et Cubebæ Matica

Ext. maticæ liq. . .	ʒij.
Liq. copaibæ, buchu, et cubebæ . . .	ʒx.
Liq. copaibæ sol. . .	ʒviij.

The liquid extract in the above formulas are proof-spirit 1-in-1 preparations made by reperco-lation.

Liq. Copaibæ, &c., c. Santal.

Ol. santal. flav. . .	ʒij.
Spt. rectificat. . .	ʒij.
Liq. copaibæ, &c. . .	ʒxvj.

Mix in the above order.

Sometimes these liquors are flavoured with cinnamon or other essential oil in the proportion of 5 to 10 minims to the ounce—*e.g.*, *Liq. Copaibæ et Olei Santali*, B.P.C., modifies the above thus: ol. santal. flav. 10, ol. cassiæ ⅛, liq. c., b., et c. (No. 1.) 80, alcohol ad 100.

Liquor Croci

Cut saffron . . .	ʒj.
Glycerine . . .	ʒv.
Rectified spirit . .	ʒxv.

Exhaust with the spirit by maceration, and add the glycerine.

Liquor Doveri

Morphin. acetat. . .	ʒj.
Acid. acetic. dil. . .	ʒj.
Vin. ipecacuanhæ . .	ʒij.
Spt. tenuior. . . .	ʒvij.

Dissolve the acetate in the acid, add the other fluids, and after twenty-four hours filter.

Dose: ♏x. to ♏xx. at bedtime.

Liquor Eastoni pro Syrupo

Iron wire . . .	ʒiiss.
Phosphoric acid, s.g. 1·5	ʒij. ʒvj.
Water	ʒiij.

Dilute the acid with the water in a flask, add the wire, and heat gently until dissolved; add hypo-

phosphorous acid ʒss., strain at once, and add to

Powdered strychnine	gr. x.
Phosphate of quinine	ʒiv.
Water	℥iij.

Dissolve, filter, and wash the filter with water to make the filtrate measure 10 oz.

One part of this solution to 3 parts of thick syrup makes Easton's syrup. It is advisable to keep the iron and alkaloid solutions separate.

Liquor Ergotæ Ammoniat.

I

Ergot (in coarse powder)	℥xx.
Strong solution of ammonia	ʒj.
Water	Ov.

Mix the ammonia with the water and macerate the ergot in a third of the mixture overnight. Strain in the morning and repeat the cold infusion with half of the remaining ammoniated water for four hours. Do this a second time, mix the strained liquors, and evaporate to 10 oz. To this add

Aromatic spirit of ammonia	℥x.

Allow the liquor to settle, decant the clear portion, and filter the rest, washing the filter with the aromatic spirit to make 20 oz. of liquor.

This liquor may also be made by repercolation with a menstruum consisting of

Solution of ammonia	ʒj.
Water	℥vij.
Rectified spirit	℥xij.

II

Crushed ergot	1 lb.
Strong solution of ammonia	ʒj.
Rectified spirit	℥iv.
Water	q.s.

Moisten the ergot with a mixture of the ammonia, ʒij. of spirit, and ℥vij. of water; pack, and after twelve hours percolate with the remainder of the mixture. Add water to the marc until ℥x. of percolate is obtained, which reserve. Percolate with other ℥xx. of water, evaporate to ℥iv. Dissolve in the reserved portion, add the remainder of the spirit, and filter.

NOTE.—Evaporation may be avoided by the process of repercolation with the same menstruum.

Liq. Euonymin., B.F.
(*Liquor Euonymi, B.P.C.*)

Euonymin	gr. xxxij.
Alcohol (45-per-cent.)	ʒj.
Oil of coriander	♏iv.

Dissolve the euonymin and oil i the alcohol, and filter. (ʒj. = euonymin gr. iv.)

Dose: Fifteen to thirty minims.

Liq. Euonymini Sol.

B.P. euonymus extract	ʒviij.
Solution of potash	ʒij.
Warm water	℥xiij.
Rectified spirit	ʒv.

Mix the water with the solution of potash and triturate the extract gradually with it. When cold transfer to a bottle, wash out the mortar with the spirit, and add the washings to the bottle. Macerate three days and filter.

ʒj. = euonymin. gr. iij.

Liq. Euonymin. et Bismuthi

Liq. euonymini sol.	ʒij.
Liq. bismuthi co.	℥xviij.

Mix, and filter after a day.

Liq. Euonymini et Bismuthi c. Pepsin.

As above, with liq. bismuthi co. c. pepsin.

Liq. Euonymini et Cascaræ

Liq. euonymin. sol.	℥iv.
Elixir cascar. sagrad. (Second formula p. 592).	℥xvj

B.P.C. is not unlike this.

Liquor Euonymini c. Pepsino

Tr. euonymi ʒiiss., pepsini (in scales) ʒiv., ac. hydrochlor. dil. ʒiij., glycerini ʒiij., aq. ad ʒxx. ʒj. for a dose.—*A. Ph. F.*

Liq. Euonymi et Pepsin. Co.

Euonymus-bark	ʒv.
Coriander-seeds	ʒj.
Rectified spirit	ʒvj.
Water	ʒvj.

Treat the drugs, coarsely powdered, by percolation with the mixed liquids until 12 oz. of percolate is obtained, and add

Comp. tincture of cardamoms	ʒij.

Then add the following solution:—

Scale pepsin	ʒij.
Water	ʒj.
Glycerine	ʒv.

Set aside for two or three days to settle, decant the clear portion, and filter the rest.

NOTE.—The average dose of these euonymin liquors is 1 fl. dr.

Liq. Euonymini et Pepsini, B.F.

Pepsin	gr. xxxij.
Dilute hydrochloric acid	ɱlxxx.
Solution of euonymin	ʒss.
Alcohol (45-per-cent.)	ʒss.
Chloroform-water to	ʒij.

Mix. (ʒj. = pepsin gr. ij. and euonymin gr. j.)

Dose: ʒj.

Liquor Ferri Albuminati

The following is a modification of the German Pharmacopœia process, which gives good results. Everything has to be taken by weight:—

Dialysed iron	12 oz.
Distilled water, 50° C.	400 oz.

Mix.

Then make a solution of

Dried egg albumen	3 oz.
Distilled water	400 oz.

Warm to 50° C. and pour into the iron solution, constantly stirring. Draw off 20 oz. of the liquor, and fill a 30-minim graduated syringe with solution of soda and add it drop by drop to the pint of solution until a bulky precipitate resembling ferric hydrate is formed. Allow this to subside, and if the supernatant liquor is not clear, add a drop more of the soda solution. Stir well and allow to settle again, and so on until the liquor is water-white. Note how much soda solution has been used, and as the total volume of liquor is 40 pints, add 39 times as much of the soda solution to the rest of the liquor, stir well, and decant. Wash the precipitate with three lots of distilled water at 50° C., collect it on a cotton or flannel filter. Drain the precipitate, transfer it to a tared gallon bottle, and add

Solution of soda, s.g. 1·17	½ oz.

Shake or stir well until solution is complete, then add

Rectified spirit	15 oz.
Cinnamon-water	10 oz.
Aromatic tincture	2 drachms

previously mixed. (This mixture should be ready before adding the solution, and poured in immediately after, otherwise the mixture gelatinises.) Finally add distilled water to bring up the weight to 100 oz.

The B.P.C. has a preparation of the same name made by a similar method. Also *Liq. Ferri Peptonatis cum Mangano*, which contains, in addition, manganese chloride 0·34 per cent.

Liq. Ferri Hypophosph. Fort.

1. Br. P.C.

A solution of ferric hypophosphite, made by mixing aqueous solutions of ferric chloride 1,000 gr. and sodium hypophosphite 1,100 gr. The precipitate is collected on calico and washed until free from

chloride. It is then dissolved in the following:—

Strong solution of ammonia	360 mins.
Citric acid	800 gr.
Distilled water	5 oz.

After filtering, the iron strength of the solution is determined by precipitation of 10 c.c. with liq. potassæ, igniting the precipitate, and weighing it. The weight in grams, multiplied by 137·1, gives the strength per oz. Add water to make the solution 40 gr. per oz.

Dose: 10 to 30 minims.

The B.P.C. method is easier, and embodies N.F. principles.

II

The 'National Formulary' gives two formulas. The first is made by precipitation of ferric hypophosphite from a solution of iron alum 330 grams in 1½ litre of water by a solution of sodium hypophosphite 220 grams in the same volume of water. The washed and drained precipitate is then stirred in a mortar with potassium citrate 215 grams to make a smooth paste. Glycerine 150 c.c. is next added, and water to a litre, the solution set aside in a cold place for several days, then filtered from any crystals which have formed. In the second formula the solution is made from dry ferric hypophosphite 165 grams, potassium citrate 215 grams, glycerine 150 c.c., and water to 1 litre, the hypophosphite being rubbed with 300 c.c. of water before the glycerine is added.

Liq. Ferri et Mangan. Phosphat.

Sulphate of iron	168 gr.
Sulphate of manganese	113 gr.
Phosphate of sodium	247 gr.
Glacial phosphoric acid	ʒvj.
Distilled water	a sufficiency

Dissolve 150 gr. of the sodium phosphate in 2 oz. of hot water, and the iron salt in 1 oz., mix and add sodium bicarbonate to the mixture until effervescence ceases. Then add a pint of warm water and throw the precipitate on to a filter; wash well. Dissolve the remainder of the sodium phosphate in 2 oz. of hot water, and the manganese sulphate in 1 oz. Mix and proceed as with the iron salt. To the moist precipitates add the glacial acid, dissolve, add distilled water to 2 oz., and filter.

ʒj. = 4½ gr. ferri phos. and 3 gr mangan. phos.

Liquor Ferri Iodidi

I

Iron wire, cut small	ʒj.
Iodine	ʒij.
Water	ʒij.

Place the iron and iodine in a flask and add the water; warm gently to start the action, and set aside until action ceases and the whole of the iodine is combined. Decant, add 1 dr. of concentrated hypophosphorous acid, filter, and wash the filter with water which has been used to wash out the flask. Product ʒiv.

One volume of this solution to 7 volumes of thick syrup makes syr. ferri iod., B.P.

II. A. Ph. F.

(For syrup, 1 part to 7 parts of simple syrup)

Ferri ʒss., iodi gr. 726, acid. hypophosph. ʒiss., aquæ q.s. Digest the iron wire (free from oxide) and iodine, with 2 fl. oz. of distilled water, in a glass flask, loosely stoppered with cotton-wool; keep gently boiling, with continual shaking, controlling the action by means of a cold-water bath until the liquid loses its yellow colour. Heat to boiling; allow to cool, filter, add the hypophosphorous acid, and pass sufficient recently

boiled and cooled water through the filter to make 2½ fl. oz., sp. gr. 1·63.

NOTE.—The N.F. liquor is made from iron 200 grams, iodine 664 grams, diluted hypophosphorous acid (10-per-cent.) 25 c.c., and water to 1 litre in the above manner. It contains about 85 per cent. of FeI_2, and 1 volume of it to 7 volumes of syrup makes syr. ferri iod., U.S.P.

Liquor Ferri Iodidi Fortis, B.P.C., is practically N.F.

The German and Russian Pharmacopœias require the liquor to contain 50 per cent. of FeI_2.

Liq. Ferri Peptonati

Solution of dialysed iron	ʒiv.
Distilled water	℥ix.

Mix.

Pure dry peptone	ʒj.
Distilled water	℥ix.

Dissolve and add the iron solution to it. Neutralise the clear liquor exactly with solution of soda, and wash the precipitate by decantation; then collect it on a twill filter and wash until free from chloride. Then transfer to a dish, warm on a water-bath, and promote solution by the addition of three to five drops of diluted hydrochloric acid. Next add

Rectified spirit	ʒiij.
Brandy	ʒvj.
Water to	℥ivss.

Filter if necessary.

This formula is an improved one by Dieterich. The B.P.C. one is from N.F.

Liquor Ferri Oxysulphatis, N.F.

Sulphate of iron	℥v.
Nitric acid	℥v.
Distilled water to	℥xxxij.

Dissolve the sulphate in 27 oz. of the water by boiling. Add the acid, and continue the heat until chemical action ceases. When cold make up with distilled water to 32 oz.

Liq. Ferri Subsulphatis, U.S.P.

(syn. *Monsel's Solution*)

Ferrous sulphate (in clear crystals)	675 grams
Sulphuric acid	65 grams
Nitric acid	a sufficiency
Distilled water	a sufficiency

Add the sulphuric acid to 500 c.c. of water contained in a large porcelain dish. Heat to 100° C. nearly and add nitric acid 70 grams. Next add the ferrous sulphate a quarter at a time, stirring after each addition until effervescence ceases. If the solution is black add nitric acid, a few drops at a time, until the evolution of red fumes ceases, and the solution assumes, on boiling, a ruby-red colour, and is free from nitric acid. Finally add distilled water to make the product weigh 1,000 grams. [Sp. gr., about 1·548 at 25° C.]

Used as a styptic, but also given internally in doses of ♏v. to ♏x.

Ferri Subsulphas, *Ferri Oxypersulphas*, *or Monsel's Salt* is made by evaporating and scaling the above solution.

Liquor Glusidi, C.F.

(N.F. 1906.)

Gluside	202 gr.
Sodium bicarbonate	29 gr.
Alcohol (95-per-cent.)	5 fl. oz.
Water to	20 fl. oz.

Proceed as in elixir glusidi, Br.P.C. (p. 594).

Liquor Guaiaci Alkalinus

Guaiacum resin	ʒv.
Carbonate of potassium	ʒiij.
Pimento	ʒij.
Proof spirit	Oij.

Macerate for five days and filter.

Liquor Hypophosphitis Comp.

(Dr. Frederick Churchill)

1. Gibson's Formula

Ferrous sulphate .	2 oz. 382 gr.
Sodium sulphate .	5 oz. 364 gr.
Magnesium sulphate	2 oz. 22 gr.
Calcium hypophosphite . . .	6 oz. 112 gr.
Hypophosphorous acid (30-per-cent.)	½ oz.
Water . . .	50 oz.

Dissolve the hypophosphite in the water by heating; bring to the boil; add the acid and the sulphates, stirring assiduously for two or three minutes. Pour on a paper filter and wash with water to 70 oz.; then add to the following solution:—

Calcium hypophosphite . . .	3 oz. 365 gr.
Hypophosphorous acid . . .	5 oz.
Distilled water .	25 oz.

Set aside in a cold place for several days and filter.

II. Br.P.C.

Calcium hypophosphite .	320 gr.
Sodium hypophosphite .	320 gr.
Magnesium hypophosphite	160 gr.
Strong sol. of ferric hypophosphite . . .	6 oz.
Hypophosphorous acid (30 p.c.) . . .	½ oz.
Distilled water to . .	20 oz.

Br.P.C. directed to dissolve the hypophosphites of calcium, sodium, and magnesium in 12 fl. oz. of distilled water; add the solution of hypophosphite of iron and the hypophosphorous acid. Filter, and make up.

Dose: ½ to 2 fl. dr.

Liq. Hypophosphitum, N.F., is a solution of calc. hypoph. 35 grams, sod. hypoph. 20 grams, potassium hypoph. 17·5 grams, and citric acid 16 grams in sufficient distilled water to make 1 litre.

Dr. Churchill's prescription was for a ferrous preparation, and Gibson's formula alone provides a solution in accordance with the original.

Liq. Iodi Carbolatus

(syn. *Boulton's Solution; French Mixture*)

Tr. iodi co., U.S.P. .	♏cx.
Acid. carbolic. . .	♏xl.
Glycerini . . .	℥iiss.
Aq. dest. ad . . .	℥xvj.

Mix the liquefied acid with the glycerine, then add the tincture and the water. Expose the solution to the sunlight until it becomes colourless.

Tr. Iodi Co., U.S.P.—Iodi gr. xv., pot. iod. gr. xxx., in S.V.R. ℥j.

Liquor Iodi Caustieus, N.F.

(*Churchill's Iodine Caustic*)

Iodine	℥vj.
Potassium iodide . .	℥iss.
Distilled water . .	℥iij.

Liq. Iodi Dilutus, C.F.

Iodine	440 gr.
Potassium iodide . .	600 gr.
Distilled water to . .	20 oz.

B.P.C. is liq. iodi, B.P. 1885.

Liquor Iodi Glycerinus

(Morton's)

Iodine	gr. x.
Potassium iodide . .	℥ss.
Glycerine . . .	℥j.

NOTE.—It is advisable to dissolve the iodine and iodide in about ½ dr. of water before adding the glycerine (℥viiss.).

Liquor Lugol.

Liquor iodi, B.P., 1885, is often given for Lugol's solution; but the fact may be recalled that Dr. J. G. A. Lugol, the French physician who popularised the use of iodine in scrofulous affections, wrote several prescriptions for iodine solutions. We quote the subjoined, from a MS. by Dr. John Davy (brother of Sir Humphry Davy):—

'*Solution of Iodine for internal use*

	No. 1	No. 2	No. 3
Iode . .	gr. ij.	gr. iij.	gr. iv.
Iodure de pot.	gr. iij.	gr. vj.	gr. viij.
Eau dist. .	lb. j.	—	—

'Dr. L. uses this for the eyes rather than the ointment. It should be injected under the lids with a little syringe.

'*Solution iodurée rubefiante*

Iode	ʒiv.
Iod. de pot. . . .	ʒj.
Eau d. . . .	ʒvj.

'It should be kept in a bottle with a glass stopple. He uses it to incite scrofulous ulcers of all kinds, and for caries.'

Liq. Magnesii Citrat. Conc.

Magnesium carbonate .	15 grams
Citric acid . . .	27 grams
Oil of lemon . .	1 drop
Simple syrup . .	60 c.c.
Hot water . . .	90 c.c.
Carbonated water .	360 c.c.

Dissolve the citric acid and magnesium carbonate in enough hot water to make 90 c.c.; drop the oil of lemon on the magnesium carbonate before it is added to the citric-acid solution, and when the reaction is completed filter.

To make a bottle of solution, use 90 c.c. of the concentrate, add 60 c.c. simple syrup, then a sufficient quantity of carbonated water (soda-water) to make 360 c.c.

Liq. Mag. Cit., B.P.C., resembles liq. mag. cit., B.P., 1885, p. 252.

Liq. Magnesii Sulphatis
(*Henry's Solution*)

Saturate any quantity of water with Epsom salts at the normal temperature, and to every 7 oz. of the solution add 1 oz. of diluted sulphuric acid; then filter. [The quantities are: Mag. sulph. ʒxij., ac. sulph. dil. ʒiij., aq. ad ʒxxiij. The B.P.C. is similar.]

Dose: ʒss. in a wineglassful of water every half-hour until the desired effect is produced.

NOTE.—ʒss. = mag. sulph. ʒij. and acid. sulph. dil. ʒss. The formula originated with Dr. James Henry, who communicated it to the *Edinburgh Medical and Surgical Journal*, January, 1834.

Liq. Morphinæ Citratis

I. Porter's

Opium	ʒiv.
Citric acid . . .	ʒij.
Boiling water . . .	ʒxvj.

Digest for a day and filter.

II. N.F.

Morphine (alkaloid) .	gr. xlviij.
Citric acid . . .	gr. xl.
Cochineal . . .	gr. iss.
Alcohol (95-per-cent.) .	ʒiij.
Distilled water to . .	ʒiij.

Triturate the solids with the alcohol and 2 oz. of water, filter, and pass enough distilled water through the filter to make 3 oz.

The first is a formula introduced early in the nineteenth century as *Liquor Morphii Citratis*. The second is an American refinement of it. Neither of them is stable, but the first with 4 oz. of rectified spirit in place of as much water is called *Liquor Porteri*.

Liquor Morphinæ Hypodermicus

(Magendie's), N.F.

Morph. sulphat.	gr. xvj.
Acidi salicylici	gr. ss.
Aq. dest.	ʒj.

(French)

Morph. acet.	gr. xiiss.
Aq. dest.	ʒj.

Dissolve the morphine salt in the warm distilled water (using a little dilute acetic acid with the acetate), and filter.

Liquor Opii Sedativus

Opium (10-per-cent.)	ʒij.
Slaked lime	ʒij.
Rectified spirit	ʒv.
Finest sherry	ʒj.
Water	a sufficiency

Boil the opium (in small pieces) and lime in 15 oz. of water for half an hour and allow to cool. Make up to 14 oz. with water, add the spirit and sherry. Filter, press the marc, and add proof spirit to make 20 oz. Set aside for six months to mature, and filter.

NOTE.—This gives a liquor of fine aroma and splendid therapeutic effect, but it must be allowed the time to mature, otherwise it lacks aroma, and the objectionable alkaloid is not wholly precipitated.

The B.P.C. has this formula with alcohol ʒiv. and sherry ʒiij. The Australian is:—

Opii (10-per-cent.) ʒij., calcii hydratis ʒij., alcohol. (90-per-cent.) ʒiv., vini xerici ʒiij., aquæ q.s. Boil the opium (broken into small pieces) and lime in 15 oz. of water for half an hour, and allow to cool. Make up to 13 oz. with water; add the alcohol and sherry. Filter, press the marc, add the filtered expressed liquid, and to this add proof spirit to make ʒxx. Set aside for six months to mature; filter. By allowing it to stand for the time mentioned the flavour and aroma are greatly improved.—*A.Ph.F.*

Liquor Pancreaticus

The name applied by the late Mr. F. B. Benger to a preparation described by Sir Wm. Roberts, and made by macerating with occasional agitation pancreas, freed from fat and cut small, in four times its weight of a mixture of rectified spirit 1 part and water 3 parts, and filtering at the end of a week. The 'National Formulary' gives the following:—

Pancreatin, N.F.	256 gr.
Sodium bicarbonate	1⅓ tr. oz.
Glycerine	8 fl. oz.
Compound spirit of cardamom, N.F.	1 fl. oz.
Alcohol (95-per-cent.)	1 fl. oz.
Purified talc	½ tr. oz.
Water to	32 fl. oz.

Triturate the pancreatin and the bicarbonate with 20 oz. of water; add the S.V.R., compound spirit, and talc; shake and filter clear, adding water to 24 oz., then the glycerine.

Liquor Pancreatini, B.P.C., Armour's formula, viz.: Gly. pancreatin. 16·5, sod. bicarb. 3·5, glycerin. 5, alcohol. 15, aq. dest. ad 100.

Liquor Pepsini

(Scheffer)

Six pounds of the mucous membrane of pigs' stomachs is macerated for thirty-six hours in a mixture of glycerine 4 lbs., water 64 oz., and hydrochloric acid 6 oz., after which the liquor is strained and the membrane again macerated for three hours in water 48 oz., maceration being continued in this manner until 160 oz. of strained liquor is obtained. This is allowed to stand for a few days, and is then filtered with the aid of kieselguhr or fullers' earth.

This method of making pepsin solution is now historic, and n

various modified forms is still followed by several manufacturers. It provides a solution of the gastric juice. '*Liquor Pepticus* (Benger)' is understood to be made upon this principle, but with a different menstruum (weak spirit flavoured with chloroform). Since Scheffer's process was first made public the quality of pepsin has much improved, and the best makes of scale pepsin exhibit the gastric ferments in an almost unaltered condition, and they may with advantage be used in the following manner :—

Ph.F.

Pepsin.	ʒiv.
Acid. hydrochlor. dil. .	ʒiij.
Glycerini . . .	ʒiij.
Spt. rectificat. . .	ʒj.
Aq. chloroformi . .	ʒiv.
Aq. destillat. ad . .	ʒxx.

Dissolve the pepsin in 10 oz. of the water to which the acid has been added, add the rest of the ingredients except the glycerine, allow to stand overnight, filter through a wetted filter sprinkled with French chalk, then add the glycerine.

B.F.

Soluble scale pepsin .	ʒv. ℈j.
Dilute hydrochloric acid .	ʒiij.
Alcohol (90-per-cent.) .	ʒj.
Glycerine . . .	ʒiij.
Chloroform-water . .	ʒx.
Distilled water to . .	ʒxx.

Mix. (ʒj. = pepsin gr. ij.)

Dose : ʒss. to ʒj.

Liq. Pepsin. et Euonymi

Tr. euonymi . . .	ʒiiss.
Liq. pepsin. (as above without spirit) . .	ʒxviiss.

M.

Other hepatic stimulants may be combined with the pepsin liquor in the same manner.

Liquor Pepticus

The A.Ph.F. formula is liq. pepsini, Ph.F., with essence of rennet 8 oz. in place of chloroform-water. The B.P.C. is Armour's formula, viz. : Gly. peps. fort. 12·5, ac. hydrochlor. dil. 2·5, alcohol. 10, glycerin. 2·5, aq. dest. ad 100.

Liquor Peptonati

See Liq. Ferri Peptonati. If required 'cum mangano' add 1 oz. of manganese glycosate to each 19 oz. The glycosate is made thus : Dissolve potassium permanganate 87 gr. in water 12 oz., and add at 60° C. glucose 50 gr. dissolved in water. Mix, allow the precipitate to subside, decant, wash, collect on calico, press and mix the precipitate with glucose ʒx., then warm on a water-bath with sufficient soda solution (1 in 4) to make a clear solution, add rectified spirit ʒiss. and water to 3 oz.

Liquor Phosphatum Comp.

Polished iron wire . .	300 gr.
Phosphoric acid, s.g. 1·500 . . .	7 oz.
Distilled water . .	6 oz.

Mix the water and acid, and dissolve the iron wire in the mixture by applying a gentle heat ; filter through calico into a solution made as follows :—

Precipitated chalk . .	960 gr.
Carbonate of potassium .	72 gr.
Phosphate of sodium .	72 gr.
Phosphoric acid, s.g. 1·500	4 oz.
Cochineal colouring	a sufficiency
Concentrated orange-flower water . .	4 oz.
Water . . .	a sufficiency

Dissolve the chalk in the acid and 10 oz. of water, add the soda and potash salts, the orange-flower water, and sufficient cochineal to colour ; then filter, and wash the

filter with water until 27 oz. of filtrate is obtained. Product 40 oz.

One volume of this to 3 volumes of thick syrup makes Parrish's syrup. By making 20 oz. of product a 1-to-7 liquor is obtained, but it does not keep well.

Liquor Phosphori

(Ashburton Thompson)

(syn. *Syrupus Phosphori; Tr. Phosphori*)

I

Phosphorus . . .	gr. j.
Absolute alcohol . .	ʒv.
Glycerine . . .	ʒiss.
Rectified spirit . .	ʒij.
Spirit of peppermint .	♏xl.

Dissolve the phosphorus in the alcohol by a gentle heat, and to the solution add the glycerine and spirit, previously warmed. When cold add the spirit of peppermint.

'ʒj. = phosphorus gr. $\frac{1}{12}$.'

The above is the original prescription, and should not be confused with elixir phosphori, p. 597, and tr. phosphori co., p. 806.

II. N.F.

Phosphorus . .	1 gr.
Absolute alcohol .	1 fl. oz.
Spirit of peppermint . . .	8 minims
Glycerine . .	2 fl. oz.

Dissolve the phosphorus in the absolute alcohol, in a stoppered phial or test tube, by immersion in a water-bath and frequent agitation. When nearly cold add the glycerine, and finally the spirit of peppermint.

'ʒj. = phosphorus gr. $\frac{1}{24}$.'

III

Phosphorus . . .	gr. j.
Absolute alcohol . .	ʒj.
Oil of peppermint . .	♏ij.
Rectified spirit . .	ʒss.
Glycerine to . . .	ʒvj.

Place the phosphorus and glycerine in an 8-oz. flask or good bottle. Heat in a water-bath, shaking occasionally until the phosphorus is dissolved. Then add the absolute alcohol, heated in the same way, and the rectified spirit with the oil dissolved in it.

'ʒj. = phosphorus gr. $\frac{1}{48}$.'

It takes several hours to make liq. phosphori by the first prescription, and there is great loss of alcohol, while most of the phosphorus is oxidised. The second formula is not much better. The late Mr. John Williams found that hot glycerine dissolves phosphorus easily, but alcohol throws down some of it, and he thought the fullest strength of the resulting solution was about gr. $\frac{1}{24}$ in a drachm. In our experience it varies between gr. $\frac{1}{36}$ and gr. $\frac{1}{50}$, much of the phosphorus in the stronger solution being deposited during cold weather. The third formula we have found to be satisfactory, and the resulting solution contains a little more free phosphorus than Ashburton Thompson's, without, of course, the phosphorus oxides.

Liq. Phosphat. Ferri Magnet.

Liq. ferri persulphat. B.P.	11 oz.
Liq. ammoniæ . . .	16 oz.

Dilute the ammonia with 2 pints of water, gradually add the solution of ferric sulphate previously diluted with 2 pints of water, taking care that the ammonia is in excess. Wash by decantation until free from sulphate, throw on to a calico filter, strain and drain well. Dissolve the moist magma in—

Citric acid . . .	7½ oz.
Dilute phosphoric acid .	3 oz.

Then gradually add, with constant stirring—

Solution of ammonia .	6½ oz.

Liq. Picis Alkalinus, N.F.

Coal tar	℥viij.
Caustic potash . .	℥iv.
Water	℥xx.

Dissolve the potash in the water and shake the tar with this solution until dissolved; then strain through a piece of lint.

The German liquor of the same name is a solution of potash 1, water 3, rectified spirit 3, and coal tar 3 (all by weight), filtered after standing twenty-four hours, and made up to 10 (by weight) with proof spirit.

Liquor Plumbi Caustici (Gerhardt)

Caustic potash . .	℥x.
Litharge . . .	℥j.
Water	℥iiss.

Boil together until the litharge dissolves, then add water to make the solution weigh 30 dr.

Liq. Potassæ (Brandish)
(syn. *Brandish's Alkaline Solution*)

American pearl ashes .	lb. ivss.
Quicklime . . .	lb. iss.
Wood ashes (from ash-tree)	lb. iss.
Boiling water .	Cong. iv. ℥viij.

Add the lime, then the pearl ashes, and afterwards the wood ashes to the water. Stir well, allow to stand twenty-four hours, and decant the clear liquor.

NOTE.—Most of the published formulas give the quantities incorrectly, because the writers have not recognised that Mr. Brandish's original recipe was written in old weights and measures. Cooley says that 10 to 12 drops of oil of juniper should be added to each gallon, but that is rarely done nowadays; indeed, the solution is in little demand.

Liq. Rhei Dulcis

Rhubarb (in coarse powder)	℥viij.
Rectified spirit . .	℥x.
Glycerine	℥j.
Sugar	℥vj.
Water . . .	a sufficiency

Mix the spirit with the glycerine and 8 oz. of water and pour 12 oz. of the mixture on the rhubarb. Set aside to macerate for six hours, then pack in a percolator and percolate with the rest of the mixture. When percolation ceases displace the strong tincture from the marc with water until 15 oz. of percolate has been obtained. Set this aside and continue to percolate with water until another 20 oz. of percolate is obtained. Evaporate this to 5 oz., mix with the reserved portion, dissolve 6 oz. of sugar in the mixture, make up to 24 oz. with proof spirit, and after a day filter.

Liquor Rosæ Dulcis

Carmine	℥ij.
Otto of rose . . .	℥ss.
Rectified spirit . .	℥iss.
Solution of ammonia .	℥j.
Glycerine . . .	℥xij.
Water to . . .	℥xxiv.

Mix the carmine with the ammonia solution in a wide-mouthed flask, heat gently until the carmine

is dissolved and ammonia vapour is faint, then add the water and glycerine previously mixed. Shake. Mix the otto with the spirit and filter. Add the clear solution to the carmine solution and mix.

NOTE.—With some carmines the liquor becomes cloudy after standing for a time. Should that occur the brightness is restored by a small quantity of potash solution, which, indeed, may be used in place of ammonia in the first instance, as in the following formula :—

Carmine	ʒj.
Solution of potash . .	ʒij.
Glycerine . . .	ʒiv.

Mix and add

Otto of rose . . .	ʒss.
Rectified spirit . .	ʒij.
Syrup to	Oij.

Proceed as with the first formula.

Liq. Saccharini Aromaticus

Saccharin . .	2·5 grams
Vanillin . . .	0·5 gram
Absolute alcohol .	95 grams

Dissolve and add

Cinnamon oil . .	2 grams

Mix.

Liq. Santal. Co.

I

Ol. santal. . . .	ʒij.
Ol. cubebæ . . .	ʒj.
Copaibæ . . .	ʒvj.
Ol. pimentæ . . .	ʒss.
Ol. cassiæ . . .	ʒss.
Tr. buchu . . .	ʒvj.
Inf. buchu conc. . .	ʒvj.
Spt. rectificat. . .	ʒviij.
Liq. potassæ . . .	ʒvj.
Mag. carb. levis . .	ʒj.
Aq. destillat. . . .	ʒiij.

Boil the potash solution and mix it with the copaiba and oils. Allow to stand for two days, add the water, shake well, and in half an hour add the tincture, infusion, and spirit. Next add the magnesia. Mix well, allow to stand for twenty-four hours, and filter through paper wetted with distilled water.

This formula has been adopted by the A.Ph.F. Cowley (*C. & D.*, 1910, II., 164) omits the magnesium carbonate, and gives the following quantities: Ol. santal. 16, ol. cubeb. 8, ol. piment. 0·5, ol. cassiæ 0·5, copaibæ 16, ol. olivæ 20, alcohol. 64, potass. hydrat. 5·75, tr. buchu 48, inf. buchu conc. 48, aq. ad 264. Dissolve the potash in 5 of water, add the alcohol, mix this with oils and copaiba balsam previously shaken together. Heat the mixture in a flask on a water-bath for a few minutes until a clear mixture is obtained when a little is diluted with water. Add the tincture and the infusion of buchu, diluted with 40 of water, shake well. Filter through paper, and pass sufficient water through filter to make up to 264.

II

Ol. santal. . . .	ʒj.
Liq. copaibæ sol. . .	ʒxxij.
Spt. cinnamomi . .	ʒss.
Tr. buchu (1 in 5 S.V.R.)	ʒiiiss.
Tr. cubebæ (1 in 5 S.V.R.)	ʒiij.

Mix in the above order and filter through a filter-paper sprinkled with fullers' earth.

No. II. (without liq. copaibæ sol. and alcohol to ʒxx.) is B.P.C.

Dose : A teaspoonful.

Liquor Sennæ Fruct.

Bruised senna-pods .	ʒxvj.
Rectified spirit . .	ʒv.
Distilled water . .	ʒxij.

Macerate for a day, stirring the mixture two or three times ; then press out the liquor. Dissolve in it ol. carui ɱj., ol. amygd. essent. ɱj., ol. limonis ɱij., and reserve. Again macerate the marc in the following menstruum :—

Solution of ammonia .	ɱxx.
Glycerine . . .	ʒj.
Distilled water . .	ʒxix.

After six hours press out as much liquor as will make 16 oz. when

mixed with the first portion. Filter.

Dose: ʒj.

Normal Salt Solution
(syn. *Isotonic Solution*)

A 0·628-per-cent. solution of sodium chloride in sterilised distilled water—*i.e.*, 11 grains to 4 oz. Used for making nasal douches, &c.

Liquor Strychninæ Acetatis, N.F.
(*Hall's Solution of Strychnine*)

Acetate of strychnine	gr. iij.
Diluted acetic acid (6-per-cent.)	♏xlviij.
Alcohol (95-per-cent.)	ʒvj.
Compound tincture of cardamoms (U.S.P.)	♏xv.
Water to	ʒiij.

Dissolve the acetate of strychnine in about 1½ oz. of water mixed with the diluted acetic acid, then add the spirit, tincture and enough water to make 3 oz. Allow the mixture to stand a few days, and filter.

Liquor Van Swieten
(*Liqueur de Van Swieten, Codex*)

Perchloride of mercury	gr. xv.
Rectified spirit	ʒiij.
Distilled water to	ʒxxxij.

Liquor Thymolis
(Volckmann)

Thymol	ʒj.
Rectified spirit	ʒiiss.
Glycerine	ʒiiss.
Water	Ovj.

Liquor Thymolis Compositus
A.Ph.F.

Thymol. ʒij., ac. benz. ʒvj., eucalyptol. ʒss., ol. gaultheriæ ♏xx., menthol. ʒj., boracis, ac. boric. aa. ʒj., alcohol. (90-per-cent.) ʒxx., aquæ q.s. Dissolve the first five ingredients in the alcohol, the borax and boric acid in 50 fl. oz. of water, mix the solutions, and add water to 100 fl. oz. Stand for a few days, then filter through talc.

B.F.

A

Benzoic acid	gr. lxiv.
Borax	gr. lxiv.
Boric acid	ʒij. gr. viij.
Distilled water	ʒvj.

Dissolve.

B

Thymol	ϑj.
Menthol	gr. vj.
Eucalyptol	♏iv.
Oil of wintergreen	♏iv.
Oil of peppermint	♏ij.
Oil of thyme	♏j.
Alcohol (90-per-cent.)	ʒiij.

Dissolve.

Mix A and B, make up to ʒxx. with distilled water, and filter.

The B.P.C. preparation contains no borax and differs in quantities.

Spt. Thymol. Comp.

Benzoic acid	ʒj. 32 gr.
Sodium biborate	ʒj. 32 gr.
Boric acid	ʒij. 64 gr.
Distilled water	ʒxlviij.

Dissolve with heat. Then add

Thymol	ϑviij.
Eucalyptol	ʒss.
Oil of wintergreen	ʒss.
Oil of peppermint	♏xv.
Oil of white thyme	♏v.
Rectified spirit	ʒxxiv.

Colour with 10 drops of caramel and add distilled water to 1 gallon. After twenty-four hours filter with fullers' earth.

Genuine Listerine is reputed to contain tincture of baptisia 15, boric acid 25, benzoic acid 1, thymol 1, eucalyptol 1, oil of wintergreen 2, oil of peppermint ½, in 100 parts of a mixture of rectified spirit (1) and water (2).

Liquor Tolutanus pro Syrupo

Tolu balsam	ʒv.
Rectified spirit	ʒv.
Kaolin	ʒiv.
Light magnesia	ʒij.
Water to	ʒxxxvj.

Dissolve the balsam in the spirit,

heating gently to assist solution. Pour the solution upon the mixed powders in a large mortar, triturate; then work in 30 oz. of warm water. Allow to cool, filter, and wash the filter with water to make 36 oz. of product.

One volume of this to 4 volumes of syrup.

(Farr and Wright and B.P.C.)

Balsam of tolu . .	ʒiv.
Alcohol (90-per-cent.) .	℥iss.

Dissolve and add to

Distilled water (70° C.)	ʒiij. ʒij.

Shake well and set aside for twenty-four hours, then filter bright.

One part to 7 parts of syrup.

Liquor Zingiberis, C.F.

Strong tincture of ginger .	ʒx.
Purified talc . . .	ʒvj. ʒvj.
White sugar . . .	ʒvj. ʒvj.
Distilled water to . .	℥xx.

Triturate the tincture with the sugar and talc, add the water, shake, and filter, returning the filtrate to the filter until a clear liquid is obtained.

Liver-Tonics

P.F. 22

Tr. nucis vomicæ . .	♏xlviij.
Tr. zingib. . . .	ʒj.
Tr. rhei,	
Tr. chiratæ . .	aa. ʒij.
Tr. aurantii . . .	ʒj.
Spt. chloroformi . .	ʒj.
Ammon. carb. . .	℈iv.
Potass. bicarb. . .	ʒij.
Inf. gentian. co. ad .	℥viij.

Cap. ʒj. ter die post cibos.

P.F. 23

Acid. nitro-mur. dil. .	ʒij.
Tr. nucis vomicæ . .	♏xl.
Tr. gentianæ co. . .	ʒj.
Succi taraxaci . .	ʒj.
Magnesii sulphat. . .	ʒj.
Potassii chloratis . .	ʒj.
Spt. chloroformi . .	ʒj.
Glycerini . . .	℥ss.
Syr. limonis . . .	℥ss.
Aquam ad . . .	℥viij.

P.F. 24. Sherman Bigg

Acid. nitro-mur. dil. .	ʒij.
Tr. podophylli . .	ʒj.
Succ. taraxaci . .	ʒvj.
Spt. chloroformi . .	ʒij.
Tr. chiratæ . . .	ʒij.
Aq. destillat. ad . .	℥vj.

A measured tablespoonful in half a wineglassful of water thrice daily.

P.F. 25

Acid. nitro-mur. dil. . .	ʒiss.
Tr. nucis vom. . . .	ʒj.
Inf. gentian. co. . . .	℥iiss.
Aq. chloroformi ad . .	℥xx.

Two tablespoonfuls to be taken three times a day, after meals.

P.F. 26

Acid. nit.-mur. dil. . .	ʒj.
Succi taraxaci . . .	℥ij.
Tr. calumbæ . . .	ʒij.
Aq. chloroformi ad . .	℥xx.

Dose: A tablespoonful in water thrice daily.

LOTIONES—LOTIONS

The following are the average quantities of medicaments per oz. of water used in making simple lotions—those marked with an asterisk are in the B.P.C.

*Acid. boric. . .	gr. x. to ℈j.
*Acid. carbolic. .	gr. x. to ℈j.
Acid. hydrocyan. dil. . . .	♏v.
*Acid. picric. . .	gr. j. to gr. iv.
Acid. sulphuros. .	ʒj.
Acid. tannic. . .	gr. viij.

Alumen	gr. v.
Argent. nit.	gr. ij.
Belladonnæ ext. (vir.)	gr. ij.
*Borax	gr. x.
Calcis chlorat. liq.	ʒss.
Cupri sulphas	gr. iij.
*Hydrarg. perchlor.	gr. ¼
Iodi tinctura	♏v. to ♏x.
Liq. carb. deterg.	♏xx.
*Liq. picis carb.	♏xx.
*Liq. sodæ chlorat.	ʒss.
Plumbi acetas	gr. iij.
*Plumbi subacet. liq.	♏x.
Potass. permangan.	gr. j.
Potass. sulphurat.	gr. x.
Sodii bicarbonas	℈j.
Sodii carbonas	gr. x.
Sodii hyposulphis	ʒss.
*Zinci chlorid.	gr. ij.
*Zinci sulphas	gr. iij.
*Zinci sulphocarbol.	gr. v.

Lotio A.B.C., St. Thos. H.P.

(*Lotio Acidi Carbolici et Boracis, B.P.C.*)

Glycerine of phenol	ʒij.
Glycerine of borax	ʒij.
Water to	ʒxx.

To be diluted with five to ten times its volume of water.

Lotio Acidi Carbolici, N.H.

Acidi carbolici	ʒv.
Acid. acetic. dilut.	ʒvij.
Camphoræ	℈ij.
Spt. rectificati	ʒiiss.
Aquam ad	ʒxl.

M.S.A.

Lotio Adstringens, N.F.

(*Warren's Styptic*)

Into a mortar put sulphuric acid ʒv., and slowly mix with it oil of turpentine ʒiv. When cold add alcohol (95-per-cent.) ʒiv. and mix.

Lotio Calcis Sulphuratæ, C.F.

Same as liq. calcis sulph., N.F., p. 671.

Lotio Bismuthi Co.

(Startin)

Bismuthi subnitratis	ʒss.
Zinci oxidi	ʒss.
Spt. camphoræ	ʒss.
Glycerini	ʒss.
Aq. ad	Oj.

M.

A soothing application for irritable skin, in acne, &c.

Lotio Calaminæ

No. 1, A Lotion for Eczema.

Calaminæ præpar.	ʒiv.
Zinci oxidi	ʒij.
Glycerini	ʒss.
Aq. calcis	ʒiv.
Aq. rosæ ad	ʒviij.

No. 2, C.F. and B.P.C.

Levigated calamine	ʒij.
Zinc oxide	ʒj.
Glycerine	ʒj.
Lime-water to	ʒxx.

Elutriate the calamine and zinc oxide by triturating in a mortar with successive portions of the lime-water and decanting from the siliceous matter, then add the glycerine.

The B.P.C. uses rose-water.

N.H.

Calaminæ	ʒss.
Zinci oxidi	℈j.
Acidi borici	gr. j.
Glycerini	ʒss.
Aquam ad	ʒj.

M.S.A.

Cooling Lotion

(Sir A. Cooper

Potass. nitrat.	ʒv.
Ammon. chlorid.	ʒv.
Aq.	ʒxvj.

Solve.

Lotio Evaporans

Ammon. chlorid.	ʒss.
Spt. rectificat.	ʒij.
Aq. ad	ʒxij.

The B.P.C. uses 1 of alcohol and 4 of distilled water.

Lotio Plumbi c. Opio

Plumbi acetat. . .	gr. xxiv.
Tr. opii	ʒvj.
Aq. ad	℥vj.

May be filtered, but is generally sent out turbid.

N.F.

Lead acetate . .	17·5 grams
Tincture of opium (U.S.P.)	35 c.c.
Water to . .	1,000 c.c.

Dissolve the lead in the water (650 c.c.), add the tincture, and make up. Shake well before dispensing or using.

B.P.C.

Plumbi acetat., acid. acetic. dil. aa. 0·5, aq. dest. ad 100 is *lot. plumbi acet.*, of which 95 and tr. opii 5, make above.

Rheumatic Lotion

Sodii carbonatis . .	ʒj.
Sol. opii . . .	ʒj.
Aquam ad . . .	℥x.

Apply to the joints on flannel.

Lotio Rubra

Zinci sulphat. . .	gr. xx.
Tr. lavand. co. . .	ʒiss.
Aq. ad	℥viij.

The B.P.C. is substantially the same, viz. : zinc. sulph. ℈ij, tr. lavand. co. ♏200, aq. dest. ad ℥xx.

(Liston)

Zinci sulphat. . . .	ʒj.
Tr. lavand. co. . .	ʒviiss.
Spt. rosmarini . .	ʒxiiss.
Aq. ad	℥xxx.

Mel Rosæ

Red-rose petals . .	lb. v.
Rectified spirit .	Cong. iss.
Water	Cong. j.
Glycerine . . .	℥xxxij.
Honey	lb. xlviij.

Macerate the red-rose leaves in the rectified spirit for twenty-four hours, then add the water, and, after two hours, press and strain. To the liquor add the glycerine, recover the spirit by distillation, and evaporate the remainder to 5 lbs. Allow to stand for twelve hours, filter, add the honey to the filtrate, and heat until the product weighs 50 lbs.

The B.P.C. gives U.S.P., viz. : fluidextract of rose 12 c.c., clarified honey to 100 grams.

MISTURÆ—MIXTURES

While most of the formulas in this section have been arranged according to the alphabetical order of the chief active ingredient, a considerable number of them are grouped together according to the complaints for which they are used, and others are placed under the names of the originators. The doses when ascertainable have been added, the equivalents being ʒj. = a teaspoonful, ʒij. = a dessertspoonful, and ℥ss. = a tablespoonful. A number of communicated formulas are also included, and, as in other cases, all the information we have received is given in regard to these. They are mostly distinguished by such numbers as 'P.F. 20.'

Mistura Acetoni

(Dr. W. L. Atlee)

Acetoni	ʒj.
Tr. camph. co.	ʒj.
Vin. antimonialis	ʒj.
Vin. picis	ʒij.

Dose: ʒj. for bronchial cough.

Mistura Acidi Hydrocyanici Composita

The B.P.C. name for Brompton Cough-mixture, p. 716.

Mistura Acida Aperiens

(Startin)

Magnesii sulphatis	ʒiij.
Acidi sulphurici dil.	ʒiij.
Ext. glycyrrhizæ liq.	ʒiij.
Aq. ad	Oj.

Dose: ʒij. to ʒss. in water. (In such skin-affections as nettlerash.)

Mistura Acidi Oxalici

(Dr. A. W. Marsh)

Acidi oxalici	gr. xvj.
Syr. aurantii	ʒj.
Aq. ad	ʒiv.

Dose: ʒj. every four hours for amenorrhœa.

Mist. Acid. Tonic., N.H.

Acid. nitro-hydrochlor. dil.	ɱxj.
Tr. gentianæ co.	ʒj.
Syr. aurantii	ʒj.
Aquam ad	ʒj.

Misce pro dose.

Acne-mixture

(Dr. David Walsh)

Magnesii sulphatis	ʒj.
Ferri sulphatis	gr. j.
Acid. sulphuric. arom.	ɱv.
Aq. menthæ pip. ad	ʒj.

Misce pro dose.

To be taken in a tumblerful of water before breakfast.

Mistura Agrimoniæ Co.

Berberis vulgaris	℥ss.
Agrimoniæ eupatoriæ	℥ss.
Antirrhinæ linariæ	℥ss.
Rad. taraxaci	℥ss.
Flor. anthemidis	℥ss.
Fruct. carui	℥ss.
Apii petroselini	℥ss.
Rad. rhei	℥ss.
Aq. bullientis ad	ʒxvj.

Bruise the drugs and herbs, pour on the water, infuse for two hours, press, and strain. To the strained product add 2 oz. of glycerine, and make up to 16 oz. with water.

Mistura Alba

Magnesii carbonatis	ʒiss.
Magnesii sulphatis	ʒiv.
Aq. menthæ pip. ad	ʒvj.

Dose: ʒss. to ʒj. as an aperient.

The B.P.C. proportions are magnes. carb. lev. ℈x., magnes sulph. ʒij. gr. 325, aq. menth. pip. ad ʒ x.

Mistura Alkalina, N.H.

Potassii nitratis	gr. v.
Potassii bicarbonat.	℈j.
Tr. aurantii	ɱx.
Aquam ad	ʒj.

Misce pro dose.

Mistura Antiepileptica

(Brown-Séquard's)

Sodii bromidi	ʒiij.
Potassii bromidi	ʒiij.
Ammonii bromidi	ʒiij.
Potassii iodidi	ʒiss.
Ammonii iodidi	ʒiss.
Ammonii carbonatis	ʒj.
Tr. calumbæ	ʒiss.
Aq. ad	ʒviij.

M.

Dose: ʒiss. before each meal, and ʒiij. at bedtime.

Mistura Antidysenterica

(syn. *Mistura Camphoræ Acida, N.F.; Hope's Camphor-mixture*)

Acidi nitrici . . .	ʒij.
Tr. opii . . .	ɱlxxx.
Aq. camphoræ ad . .	ʒxvj.

M. [U.S.P. ingredients.]

Dose: ʒss. every hour or two, according to symptoms.

Mistura Antiasthmatica

I. (Fothergill's)

Ammonii iodidi . .	ʒij.
Ammonii bromidi . .	ʒiij.
Syrup. tolutani . .	ʒiij.
Tr. lobeliæ . . .	ʒv.

Dose: ʒj. every three hours, or oftener.

II. (Shoemaker's)

Apomorphin. hydrochlor.	gr. ij.
Acid. hydrochlor. dil. .	ʒiss.
Morphin. hydrochlor. .	gr. j.
Syr. tolutan. . . .	ʒj.
Aq. chloroformi ad . .	ʒviij.

Dose: ʒss. every third hour until relieved.

Mistura Anticatarrhalis

(Dr. Burney Yeo)

Vin. ipecacuanhæ . .	ɱv.
Tr. opii	ɱx.
Spt. ætheris nitrosi . .	ʒj.
Liq. ammon. acetat. . .	ʒiij.
Aq. camphoræ ad . .	ʒiss.

This draught to be taken in the evening to abort a cold.

Jephson's Asthmatic Mixture

A polypharmic prescription of the late Dr. Jephson, of Leamington, owed its properties to potassium iodide. *See C. & D.*, 1901, I., 972.

Barbour's Mixture

A Glasgow popular remedy, sometimes called Barber's, Barbara's or Barbra's mixture. It consists of the dry ingredients of tr. camph. co. in the following proportions:—

Pulv. opii . . .	℈j.
Acid. benzoici . .	℈j.
Camphoræ . . .	℈j.

This quantity sells for 8*d.* in a box labelled with the following directions:—

'To be added to two gills of whisky. Macerate for two days, shaking occasionally, and strain. Dose: One teaspoonful thrice daily when the cough is troublesome.'

Mistura Antispasmodica

(Sydenham's)

Spt. ætheris comp. .	ʒj.
Tr. valerianæ . .	ʒv.
Tr. castorei . . .	ʒx.
Aq. fœniculi . . .	ʒxiiss.

Dose: ʒss. every three or four hours.

Mistura Antisudorifica

(Sir B. W. Richardson)

Sol. hydrogen. peroxid. .	ʒiiss
Acid. sulphuric. dil. .	ʒss.
Glycerini . . .	ʒss.
Aq. destillat. ad . .	ʒvj.

Dose: ʒj., well diluted, at bedtime, for the night sweating of phthisis.

Mistura Begbii

Acidi hydrocyanici diluti .	ʒss.
Acidi nitrici diluti . .	ʒiij.
Glycerini . . .	ʒj.
Infus. quassiæ ad . .	ʒvj.

Dose: ʒss. in a wineglassful of water three times a day.

NOTE.—This was a favourite prescription of the late Dr. Warburton Begbie, of Edinburgh, who supposed that the nitric acid reacts with the glycerine to form a nitro-compound—a not improbable conjecture. The mixture has wonderful efficacy as a tonic for consumptive persons, and it relieves the cough.

Mistura Bismuthi, B.P.C.

Glycerin. bismuth. carb.	ʒx.
Aq. destillat. ad	℥xx.

Dose: ʒss. to ʒj.

Mistura Bismuthi Composita, B.F. and B.P.C.

Bismuth citrate	ʒv. ℈j.
Solution of ammonia	a sufficiency
Chloroform	♏xxxij.
Tincture of nux vomica	ʒj.
Dilute hydrocyanic acid	ʒij. ♏viij.
Solution of carmine (Martindale)	♏xxxij.
Distilled water to	℥viij.

Rub the citrate in a little water, add ammonia solution until the salt is just dissolved, make up to ℥vj. with distilled water, and filter. Dissolve the chloroform in the tincture, add the carmine solution, and filter; wash the filtrate with enough water to make ℥viij. with the hydrocyanic acid.

(ʒj. = liq. bismuthi ʒj., spt. chlorof. ♏x., tr. nuc. vom. ♏viiss., and acid. hydrocyan. dil. ♏ij.)

Dose: ʒss. to ʒj.

Mistura Bismuthi Co. c. Morphina, B.F. and B.P.C.

Morphine hydrochloride	gr. j.
Compound bismuth mixture	ʒiij.

Dissolve. (ʒj. = morphine hydrochloride gr. $\frac{1}{24}$.)

Dose: ʒss. to ʒj.

Mistura Bismuthi Co. c. Pepsino, B.F. and .P.C.

Same ingredients as mist. bismuthi co., B.F., and soluble scale pepsin gr. lxiv. Procedure the same except that the bismuth-citrate solution is made up to ℥iv., and the pepsin is dissolved in distilled water ℥ij. and added to the citrate solution, the product being ℥viij.

Dose: ʒss. to ʒj.

Mist. Bismuthi c. Soda, B.P.C.

Sodii bicarbonat.	℈x.
Mist. bismuthi ad	℥xx.

Dose: ℥ss. to ℥j.

Mistura Bismuthi Rubra, N.H.

Liq. bismuthi	♏xl.
Spt. chloroformi	♏x.
Tr. nucis vomicæ	♏iiss.
Acid. hydrocyanic. dil.	♏j$\frac{1}{4}$
Tr. cocci cacti	q.s.
Liq. morphinæ hydrochlor.	♏vj.
Aquam ad	ʒj.

Misce pro dose.

Blood-mixture

P.F. 40

Potass. iodid.	gr. xx.
Magnes. sulphat.	℥ss.
Potass. bicarb.	ʒij.
Dec. sarsæ co. conc.	℥ss.
Aq. chloroform. ad	℥viij.

℥ss. pro dose.

P.F. 41

Potass. iodid.	ʒj.
Potass. bicarb.	ʒij.
Potass. chlorat.	ʒj.
Dec. sarsæ co. ad	℥viij.

Blood-purifying Mixture

Potass. odid.	ʒj.
Potass. bicarb.	ʒiss.
Liq. arsenicalis	ʒiss.
Spt. chloroformi	ʒss.
Ext. sarsæ co. conc.	ʒij.
Aq. ad	℥viij.

Dose: A dessertspoonful in a little water thrice daily, immediately after food.

P.F. 52

Potassii iodidi	℈iiss.
Magnesii sulphatis	℈viij.
Succi taraxaci	ʒj$\frac{3}{4}$
Aq. chloroformi	ʒiij$\frac{1}{3}$
Glycerini	ʒj$\frac{3}{4}$
Dec. sarsæ co. conc.	ʒiiss.
Aq. destillat. ad	℥xx.

Blood-purifiers

P.F. 89

Potass. bicarb.	ʒiss.
Potass. iodid.	gr. xxxvj.
Dec. sarsæ co. conc.	ʒj.
Aq. chloroformi ad	ʒvj.

M.

P.F. 90

Potass. iodid.	ʒiss.
Potass. bicarb.	ʒij.
Dec. sarsæ conc.	ʒvj.
Magnes. sulph. exsic.	ʒviij.
Liq. arsenicalis	ʒiss.
Spt. chloroformi	ʒij.
Aq. ad	ʒxcvj.

M.

ʒss. ter in die.

P.F. 91

Ferri ammon. cit.	ʒix.
Potass. iodid.	ʒvj.
Inf. gent. co. conc.	ʒij.
Glycerini	ʒiij.
Aq. chloroformi ad	ʒxxxvj.

M.

P.F. 93

Potassii iodidi	ʒj.
Magnesii sulphatis	ʒj.
Spt. chloroformi	ʒij.
Dec. sarsæ co. conc.	ʒj.
Aq. ad	ʒvj.

M.

A tablespoonful three times a day, after meals.

Blood and Skin Purifier

P.F. 92

Potassii iodidi	ʒj.
Spt. chloroformi	ʒss.
Liq. potassæ	ʒss.
Dec. sarsæ co. conc.	ʒij.
Inf. quassiæ ad	ʒviij.

M.

Dose: One tablespoonful three times a day, after meals.

Blood-renewer

Potass. chloratis	ʒj.
Potass. nitratis	ʒj.
Potass. bicarbonatis	ʒij.
Ferri et ammon. cit.	ʒij.
Spt. chloroformi	ʒj.
Dec. sarsæ conc. (1–3)	ʒj.
Aquam ad	ʒviij.

M.

ʒss. ter die sum.

Sarsaparilla Blood-purifier

Potassii iodidi	℈v.
Decoct. sarsæ conc.	ʒss.
Ext. glycyrrh. liq.	ʒss.
Spt. chloroformi	ʒij.
Aquam ad	ʒviij.

M.

Iodised Sarsaparilla

Potassii iodidi	ʒj.
Ammon. carbonat.	ʒj.
Spt. chloroformi	ʒij.
Dec. sarsæ co.	ʒv.
Inf. gentianæ co. ad	ʒx.

M.

See also Mist. Sarsæ Co.

Bronchitis-mixtures

I

Chloral. hydrat.	ʒj.
Ammon. carb.	ʒj.
Tr. digitalis	ʒj.
Syrupi	ʒiij.
Aq. ad	ʒvj.

M.

Dose: A tablespoonful every four hours.

II

(Dobell's)

Ammon. carb.	gr. xxxv.
Vin. ipecac.	ʒij.
Æther. chloric.	ʒj.
Tr. camph. co.	ʒij.
Aq. ad	ʒxvj.

M.

Dose: ʒss. three times a day, or often enough to control the cough.

P.F. 30

Ammonii bromidi	ʒj.
Ammonii carbonatis	ʒj.
Liq. tolutan.	ʒj.
Glycerini	ʒv.
Dec. senegæ conc.	ʒvj.
Aq. chloroformi ad	ʒvj.

P.F. 31

Ammonii carbonatis	ʒj.
Tr. scillæ	ʒiij.
Tr. camph. co.	ʒiv.
Inf. senegæ ad	ʒvj.

Cap. ʒss. quartis horis.

Bronchitis and Asthma Mixture

Oxymel. scillæ	ʒj.
Tr. camphoræ co.	ʒiv.
Vin. ipecac.	ʒij.
Glycerini	ʒj.
Mucilaginem ad	ʒiv.

Cap. ʒj. tussi urgente.

Bronchitis and Cough Mixture

(For Children)

Gum. acaciæ	ʒij.
Ammon. carb.	ʒij.
Glycerini	ʒxiv.
Vin. ipecac.	ʒvij.
Vin. antim. tart.	ʒxiv.
Spt. chloroformi	ʒivss.
Sacchari usti	q.s.
Aquam ad	Oiv.

See also Misturæ pro Tussi, p. 715.

Mistura Bromoformi

(P. W. Bedford)

Bromoform.	mxvj.
Spt. rectificat.	ʒij.
Tr. cardam. co.	ʒij.
Glycerini	ʒiss.

Dose: ʒj. every four hours for whooping-cough—this for children of one to three years. The dose to be gradually increased.

This formula with a minim less of bromoform is in the A.Ph.F.

Mistura Butyl-Chloral, C.F.

Butyl-chloral hydrate	℈iv.
Glycerine	ʒv.
Distilled water to	ʒxx.

Mix and dissolve.

Dose: ʒj.

Mist. Butyl-Chloral Hydratis, B.P.C., is similar with chloroform, viz.: butyl-chlor. hydrat. ʒiss., glycerin. ʒv., aq. chlorof. ʒx., aq. dest. ad ʒxx.

Mistura Calcii Chloridi

(Dr. Noble Smith)

Liq. calcii chlor.	ʒij.
Aquam ad	Oij.

M.

Mistura Calc. Chloridi c. Ferro

(Dr. Noble Smith)

Mist. calcii chlor.	ʒvij.
Mist. ferri ad	ʒxxiij.

M.

Make mistura ferri as follows:—

Tr. ferri mur., P.L.	ʒj.
Aq. camphoræ	ʒvj.

Mix and add

Spt. ammon. arom.	ʒj.
Aq. camphoræ	ʒvj.

Previously mixed.

Make liq. calcii chlor. by mixing ʒvj. each of hydrochloric acid and water, and saturate the mixture by the addition of prepared chalk ʒv. Allow to settle, and decant. It should be neutral.

Mistura Camphoræ Aromatica, N.F.

(Parrish's)

Compound tincture of lavender [U.S.P.]	ʒiv.
Sugar	ʒiv.
Camphor-water [U.S.P.]	ʒxvj.

Mix the compound tincture of lavender with about 8 oz. of camphor-water, dissolve the sugar in the mixture, and add enough water to make 16 oz.

Mistura Carminativa
(*Mothers' Friend or Infants' Preservative*)

I

Ol. anethi	♏viij.
Spt. ammon. arom.	ʒj.
Magnesii carbonat.	ʒj.
Aq. ad	ʒiv.

Add the oil of dill to the spirit, shake, and triturate with the magnesium carbonate. Add the water, mix, and filter. To the filtrate add

Sodii bromidi	℈j.
Potassii bicarbonat.	ʒss.
Tr. cardam. co.	ʒss.
Syr. rhœados ad	ʒvj.

Dose: ʒj. in a tablespoonful of water, to be given to the child in sips.

II

Potassii chloratis	gr. v.
Potassii bicarbonat.	ʒss.
Spt. chloroformi	ʒj.
Syrupi	ʒiss.
Sacch. ust.	q.s.
Aq. anethi ad	ʒvj.

Dose: ʒj., given as No. 1.

III

Sacchari albi	ʒxvj.
Aq.	ʒxv.

Solve et adde

Magnes. carb. levis	ʒj.
Pulv. rhei	ʒss.
Pulv. zingiberis	ʒiss.
Pulv. ipecacuanhæ	ʒj.
Ol. anisi	♏xv.
Ol. anethi	♏v.
Tr. opii	ʒss.
Aq. ad	ʒxxx.

The powders should be triturated with the oils, and a few ounces of the syrup added to make a smooth mixture before it is made up finally to 30 oz.

Dose: ♏v. to ʒj. or more, according to age. (ʒj. = tr. opii ♏j.)

IV

Magnes. carbonat.	℈iv.
Spt. ammon. aromat.	ʒiss.
Glycerini	ʒss.
Tr. cardam. co.	ʒiij.
Liq. calcis saccharat.	ʒij.
Aq. ad	ʒvj.

Dose: ʒj. when the child is troubled with flatulence.

Mistura Carminativa, B.P.C., is for adults, and consists of sodii bicarb. ℈x., spt. ammon. arom. ʒss., tr. card. co. ʒj., glycerin. ʒiss., aq. anethi ad ʒxx.

Gripe Mixture.
P.F. 21

Magnes. carb. pond.	ʒvj.
Ol. anisi	♏xx.
Ol. carui	♏x.
Spt. ammon. co.	ʒiiss.
Tr. opii	ʒss.
Tr. cardam co.,	
Tr. rhei aa.	ʒij.
Glycerini	ʒvj.
Aquam ad	ʒxx.

Mist. Chlori et Quininæ, B.P.C.
(Dr. Burney Yeo)

Potass. chloratis	gr. xxx.
Acid. hydrochlor. (pur.)	♏xl.
Quinin. sulphat.	gr. xxiv.
Syr. aurantii	ʒj.
Aq. ad	ʒxij.

Take a 12-oz. bottle with a tight-fitting cork, place in the bottle the chlorate and hydrochloric acid; tightly cork, and let it stand for about half an hour. Then add a little water, cork the bottle again until the water is well saturated with the chlorine, again add more water, together with the quinine and syrup, until the bottle is filled, taking care during the process that as little as possible of the chlorine escapes.

Dose: ʒss. to ʒj. every two, three, or four hours.

The above is the original. The B.P.C. orders 10 minims of acid to the ounce of mixture.

Mistura Chloroformi, ex-U.S.P.

Chloroform	8 parts
Camphor	2 parts
Fresh yolk of egg	10 parts
Water	80 parts

Rub the yolk of egg in a mortar, add the camphor dissolved in the chloroform, mix well, and add the water gradually until by stirring a uniform mixture is obtained.

Dose: ʒj. to ʒss.

Mist. Chloroformi Co., B.P.C.
(syn. *Mist. Tussi Rubra*)

Morphin. hydrochlor.	gr. ivss.
Acid. hydrobrom. dil.	ʒiiss.
Chloroformi	ɱxxv.
Tr. persionis.	ʒij.
Aq. laurocerasi	ʒv.
Syr. tolutani	ʒv.
Syrup. ad	ʒxx.

Dose: ʒss. to ʒij.

Mist. Tussi Rub. Conc., A.Ph.F., resembles this; *see* p. 718.

Cholera-mixtures

I

Acid. tannic.	ʒj.
Æther. chlor. (D. & F.)	ʒij.
Ac. sulphuric. dil.	ʒiss.
Tr. zingib.	ʒiij.
Aq. menth. pip. ad	ʒviij.

A sixth part for a dose.

II. (Sir Andrew Clark's)
For Choleraic Diarrhœa

Acid. sulphuric. arom.	ʒss.
Spt. ætheris	ʒss.
Tr. chloroformi co.	ʒj.
Tr. camphor. co.	ʒiss.
Spt. menthæ pip.	ʒiij.
Ext. hæmatoxyli	ʒiv.
Aq. camphoræ ad	ʒxij.

Dose: ʒj. for the first dose, and ʒss. every two, three, or four hours afterwards, according to the urgency of the diarrhœa.

This medicine must be preceded by a full dose of castor oil, and given only if the diarrhœa continues after the action of the oil has ceased.

III. (Sir B. W. Richardson's)

Creosoti	ɱxij.
Tr. camph. co.	ʒvj.
Spt. æther. chlor.	ʒiv.
Syr. rhœados	ʒij.

Dose: ʒj. every hour in half a tumbler of water.

See also Diarrhœa Mixtures. Nos. II. and III. are specially serviceable when there is much pain.

Cholera and Diarrhœa Mixtures

P.F. 10

Acid. sulphuros.	ɱxx.
Glycer. acid. tannici	ɱxv.
Tr. opii	ɱv.
Aq. menth. pip. ad	ʒj.

P.F. 11

Pulv. cret. arom.	ʒxij.
Spt. ammon. arom.	ʒxij.
Tr. catechu	ʒv.
Tr. cardam. co.	ʒiij.
Tr. capsici	ʒiv.
Glycerini	ʒiij.
Sodii bicarb.	ʒiv.
Cretæ præparat.	ʒij.
Pulv. acaciæ	ʒij.
Syrupi	ʒviij.
Aq. cinnamomi	ʒLX.

Mist. Codeinæ Co.

Sulphate of codeine	gr. iij.
Solution of sulphate of atropine	ɱxij.
Solution of hydrochloride of strychnine	ʒj.
Syrup of tolu	ʒiss.
Acid infusion of roses to	ʒvj.

Dose: A tablespoonful in a wineglassful of water every four or six hours.

This is a sedative cough-mixture used in the Edinburgh Infirmary for phthisical cases.

Cold-mixture

P.F. 6

Same as the next formula.

Cold and Influenza Mixtures

P.F. 10

Potass. cit.	ʒiss.
Quininæ sulphat.	gr. vj.
Liq. ammon. acet.	ʒiss.
Aq. chloroformi,	
Aq. aa. q.s. ad	ʒviij.

P.F. 11

Liq. ammon. acet. conc.	ʒiiiss.
Vin. ipecac.	ʒiij.
Spt. æther. nit.	ʒvj.
Acid. sulph. dil.	ʒiij.
Syrupi simplicis	ʒij.
Aq. chloroformi ad	Oj.

Misturæ Copaibæ, N.F.

I

(Lafayette's Mixture)

Copaiba	ʒij.
Spirit of nitrous ether	ʒij.
Compound tincture of lavender	ʒij.
Solution of potash	ʒss.
Syrup	ʒv.
Mucilage of acacia to	ʒxvj.

Mix the copaiba with the solution of potash and the spirit of nitrous ether. Then add the compound tincture of lavender, and, lastly, the syrup and mucilage of acacia. Mix the whole thoroughly by shaking.

Dose: ʒss. three times a day.

II

(Chapman's Mixture)

Copaiba	ʒiv.
Spirit of nitrous ether	ʒiv.
Compound tincture of lavender	ʒj.
Tincture of opium	ʒss.
Mucilage of acacia	ʒij.
Water to	ʒxvj.

Mix in the same way as No. 1.

Dose: ʒss. three times a day.

The preparations in these copaiba mixtures should be those of the U.S.P.

Mistura Coto

(Dr. Burney Yeo)

Ext. coto liq.	ʒj.
Tr. cardam. co.	ʒj.

Misce et adde

Mucil. acaciæ	ʒiij.
Syrupi	ʒij.
Aq. ad	ʒvj.

Dose: A tablespoonful every four hours in cases of dysentery and choleraic diarrhœa.

Croup-mixture

P.F. 4

Vin. ipecac.	ʒij.
Potass. bromid.	gr. xvj.
Æther. chloric.	ʒss.
Syr. pruni	ʒss.
Aquam ad	ʒij.

Misce.

A teaspoonful every two or three hours.

Diarrhœa-mixtures

I

(Board of Health's Prescription)

Mist. Cretæ Composita, B.P.C.

Pulv. conf. aromatic.	ʒiij.
Spt. ammon. arom.	ʒiij.
Tr. catechu	ʒx.
Tr. cardam. co.	ʒvj.
Tr. opii	ʒj.
Mist. cretæ ad	ʒxx.

Misce.

Pu.v. aromat. co., B.P. 1864, or pulv. cretæ aromat., B.P. 1898, minus the chalk, is the powder to use.

IA

(B. of H. 1848 Prescription)

Mist. cretæ co.	ʒj.
Confect. aromatic.	gr. x.–gr. xv.
Tr. opii	gtt. v.–gtt. x.
Tr. catechu	ʒss.–ʒj.

M. pro dose.

The following label, with an appropriate reference number, is permitted by the Board of Customs and Excise to be used with the mixture, to be sold by exempted persons in Great Britain free of medicine stamp-duty.

DIARRHŒA AND CHOLERA MIXTURE

(*P.F. or Pharm. Formulas*).

THE following observations from the Board of Health deserve the most serious attention from every person:—

'Looseness of the bowels, however slight, ought on no account to be neglected. It is by far the most usual forerunner of the disease (cholera), as well as the most important, because in its various degrees it constitutes the stage in which life may most easily be saved.'

Through not attending to this caution many lives have been absolutely thrown away, and, on the other hand, by a prompt and early use of such a remedy thousands have been saved both in Europe and in India.

SHAKE THE BOTTLE.

Dose: Two tablespoonfuls for an adult, one tablespoonful for a child twelve years old, and a dessertspoonful for a child seven years old. To be taken after each liquid motion.

(Name and Address.)

II

(Dr. Bickersteth's)

Tr. opii	ʒiss.
Tr. cinnamomi	ʒiij.
Tr. kino	ʒiv.
Mist. cretæ ad	ʒviij.

(Label)

COMPOUND CHALK MIXTURE.

(*P.F. or Pharm. Formulas*, II.).

For Adults Only.

Dose: A tablespoonful every hour for three doses, then every four hours while the diarrhœa lasts.

SHAKE THE BOTTLE.

(Name and Address.)

III

(Loomis', N.F.)

Tincture of opium	ʒss.
Tincture of rhubarb	ʒij.
Compound tincture of gambir (catechu)	ʒiss.
Oil of sassafras	♏xx.
Compound tincture of lavender to make	ʒiv.

(All preparations to be U.S.P.)

Dose: ʒj. in water every two hours for four doses, then every four hours.

IV

(For Children)

Bismuth. subnitrat.	ʒss.
Tr. camph. co.	ʒj.
Liq. hydrarg. perchlor.	♏xv.
Syrupi	ʒss.
Aq. ad	ʒij.

Triturate the bismuth for three minutes before adding the water and other ingredients.

Doses: For children of one to two years, half a teaspoonful; two

to five, a small teaspoonful; above five, a whole teaspoonful every three hours.

V

(Squibb's, N.F.)

Tincture of opium	℥vj.
Tincture of capsicum	℥iij.
Spirit of camphor	℥vj.
Chloroform	℥iiss.
Alcohol (95-per-cent.) to	ℨiv.

(All preparations to be U.S.P.)

Dose: ℥ss. to ℥j. every four hours. To be taken in water.

P.F. 165

Sodii bicarbonatis	ℨj.
Cretæ præparatæ	ℨj.
Pulv. acaciæ	ℨj.
Pulv. cretæ arom.	ℨj.
Spt. æther. nit.	℥vj.
Tr. opii	℥vj.
Spt. ammon. arom.	ℨij.
Tr. lavand. co.	ℨiss.
Tr. catechu	ℨiij.
Aquam ad	ℨxl.

P.F. 166

Sodii bicarb.	ℨij.
Tr. catechu	ℨv.
Chlorodyni	℥xss.
Tr. zingib.	ℨj.
Aquam ad	ℨxl.

Cap. ℨss. ter in die.

P.F. 167

Sodii salicylatis	℥ij.
Ferri sulphat.	℥ss.
Aquam ad	ℨvj.

Dose: ℨss. after each meal.

P.F. 168

Glycer. acid. carbol.	℥ij.
Tr. chlorof. et morph. ('85)	℥iij.
Aquam ad	ℨvj.

Dose: ℥ss.

P.F. 169

Acid. sulphuric. dil.	℥ij.
Tr. chlorof. et morph. ('85)	℥iv.
Aquam ad	ℨvj

Dose: ℨss.

P.F. 170

Bismuth. carb.	℥iij.
Spt. ammon. arom.	℥iij.
Tr. catechu	℥iij.
Aquam ad	ℨvj.

With or without tr. opii ℥j.

ℨss. pro dose.

P.F. 171

Pulv. aromat.	℥iij.
Spt. ammon. co	℥iij.
Tr. catechu	℥x.
Tr. card. co.	℥vj.
Tr. opii	℥j.
Mist. cretæ	ℨxvij.

ℨj. pro dose.

P.F. 172

Acid. sulphuric. dil.	℥ij.
Tr. opii	℥j.
Tr. catechu	℥iij.
Aq. cinnamomi ad	ℨvj.

Cap. ℨss. quartis horis.

P.F. 173

Pulv. cretæ aromat.	ℨiv.
Cretæ præp.	ℨvj.
Tr. catechu	℥v.
Tr. capsici	ℨj.
Ol. cassiæ	♏ij.
Dec. hæmatox. conc.	ℨviij.
Mucil. tragacanthæ	℥j.
Aquam ad	℥iv.

P.F. 174

Cretæ præp.	ℨij.
Conf. aromat.	ℨj.
Sodii bicarb.	ℨiss.
Liq. catechu	ℨij.
Ammon. carb.	℥ij.
Tr. opii	♏iv.
Spt. myrist. co.	ℨj.
Mucil. tragac.	ℨx.
Aq. menth. pip. ad	ℨxxxvj.

P.F. 175

Cretæ præp.	ʒix.
P. conf. arom. c. croco	ʒvj.
Ol. cassiæ	ɱv.
Tr. catechu	ʒiss.
Tr. card. co.	ʒvj.
Tr. opii	ʒiij.
Spt. æther. chlorici	ʒvj.
Aquæ	ʒxij.

P.F. 176

Tr. opii,		
Ess. menth. pip.	aa.	ʒss.
Tr. catechu,		
Tr. kino,		
Tr. krameriæ	aa.	ʒj.
S.V.R.,		
Aq. destill.	aa.	ʒij.

P.F. 183

Confect. aromatic. ('85)	ʒvj.
Tr. opii	ʒiij.
Tr. catechu	ʒij.
Spt. ammon. aromat.	ʒj.
Æther. chlorici	ʒij.
Aq. menth. pip. ad	ʒxviij.

N.H.

Tr. opii	ɱx.
Tr. zingiberis	ɱx.
Tr. catechu	ɱxx.
Tr. cinnamomi	ɱxx.
Mist. cretæ ad	ʒj.

Misce pro dose.

Diarrhœa or Bowel-complaint Mixtures

P.F. 1

Æther. chlor.	ʒj.
Cretæ præp.	ʒij.
Confect. aromat.	ʒj.
Syrupi	ʒiv.
Ol. menth. pip.	ʒj.
Tr. catechu	ʒij.
Tr. opii	ʒij.
Aquam ad	ʒxivj.

Dose: One tablespoonful every four hours.

P.F. 2

Syrupi	ʒss.
Acid. sulphuric. dil.	ʒiss.
Tr. opii	ʒiss.
Tr. capsici	ʒss.
Tr. catechu	ʒiij.
Pulv. tragacanth.	gr. vj.
Aq. menth. pip. ad	ʒvj.

Cap. ʒss. tertiis horis.

Diarrhœa-mixtures for Children

P.F. 177

Bismuth. carb.	ʒj. gr. xxxvj.
Tr. catechu	ʒij.
Magnes. carb.	ʒij.
Syrupi	ʒiij.
Ol. anisi	ɱxij.
Spt. ammon. arom.	ʒij.
Ammon. bromid.	ʒij.
Aquam ad	ʒxij.

Dose: One teaspoonful three times a day, or when necessary.

P.F. 178

Glycerini	ʒj.
Inf. anthemidis	ʒij.

ʒj. vel ʒij. pro dose.

P.F. 181

Conf. aromat.	ʒj.
Spt. ammon. arom.	ʒss
Tr. catechu	ʒj.
Aq. camph. ad	ʒij.

ʒj. pro dose. Tr. opii gtt. ss. required in each dose.

P.F. 182

Bismuth. carb.	ʒj.
Sodii bicarb.	ʒss.
Spt. ammon. arom.	ʒss.
Glycerini	ʒj.
Aq. camphoræ ad	ʒij.

ʒj. pro dose.

P.F. 179

Glycerini . . .	ʒj.
Mist. cretæ ad . .	ʒij.

ʒj. vel ʒij. pro dose.

P.F. 180

Cretæ præp. . . .	ʒj.
Dec. hæmatox. . .	ʒij.

ʒj. pro dose.

So far as adults are concerned, diarrhœa 'comes round regularly with the new potatoes and fresh herrings,' and is nature's attempt to get rid of matter irritating the intestines. It is well to aid nature slightly by a dose of castor oil, as Sir Andrew Clark recommended, following it by a few doses of a diarrhœa-mixture. No. I. (p. 695) we consider the safest for stock purposes. The diarrhœa of children is a much more serious, because not so simple, matter, and we include one formula (No. IV.) which provides a perfectly safe corrective, sedative, and antifermentative mixture. It has been shown that the diarrhœa of children is largely due to ptomaine-poisoning which arises from their feeding-bottles being imperfectly cleaned or their milk food in some other manner decomposing. In such cases small doses of mercurial salts are of great value, such as iodic-hydrarg. $\frac{1}{240}$ gr. or liq. hydrarg. perchlor. ♏j. in slightly sweetened water. As good as either is hydrarg. c. cretâ gr. $\frac{1}{12}$ with pulv. sacch. lact. gr. ss.

Epilepsy-mixtures

I

Potass. bromidi . .	ʒiv.
Ammon. bromidi . .	ʒiv.
Syr. aurant. . . .	ʒij.
Aq. chloroformi ad . .	ʒxx.

Two tablespoonfuls three times a day.

II

Potass. bromidi . .	ʒj.
Liq. arsenicalis . .	♏lxxx.
Spt. ammon. arom. .	ʒiv.
Spt. chloroformi . .	ʒiv.
Aquam ad . . .	ʒxx.

Two tablespoonfuls to be taken three times a day.

III

Potass. bromidi . .	ʒj.
Ferri ammon. cit. . .	ʒiv.
Spt. ammon. arom. .	ʒj.
Spt. chloroformi . .	ʒiv.
Ess. menth. pip. . .	ʒj.
Aquam ad . . .	ʒxx.

Two tablespoonfuls three times a day.

Mistura Diuretica, N.H.

Potassii acetatis . .	℈j.
Aceti scillæ . . .	♏xx.
Spt. æther. nitrosi . .	♏xx.
Decoct. scoparii ad . .	ʒj.

Misce pro dose.

Eczema-mixture for Children
(Sir Erasmus Wilson)

Liq. arsenicalis	ʒj.
Vin. ferri	ʒiss.
Syrupi	ʒiij.
Aq. anethi	℥ij.

Dose: ʒj. with meals thrice daily. [This is the dose for a child of ten years or upwards.]

Mistura Expectorans, B.P.C.

Vin. ipecacuan.	℥i.
Liq. ammon. acetat.	ʒv.
Aceti scillæ	♏320
Glycerini	ʒj., ♏320
Aq. chloroformi ad	℥xx.

Dose: ℥ss. to ʒj.

Mistura Expectorans (Stokes)
(syn. *Mistura Stokesii*)
The Original

Liq. morphinæ acet.	ʒj.
Aq. laurocerasi	ʒiss.
Syr. flor. aurant.	ʒiv.
Mucilag. acaciæ	ʒiij.
Aquam ad	℥vj.

Ft. mist. et signa.

A tablespoonful three or four times a day or when cough troublesome.

Dr. Stokes sometimes added codeine (3 gr.) or acid. hydrocyan. dil. (♏vj.) to the above mixture; but the formula as printed is the accepted one in this country for mist. Stokesii. The following is *Mistura Pectoralis*, N.F., the Stokes' Expectorant of North America:—

Ammon. carb.	gr. 128
Aquæ	ʒx.
Ext. senegæ fl.	℥ss.
Ext. scillæ fl.	℥ss.
Tr. opii camph.	℥iiss.
Syr. tolu. ad	℥xvj.

Dissolve the carbonate in the water, add the fluid extracts and tincture, and make up to 16 oz. with tolu syrup.

The Board of Customs and Excise regard Stokes' Expectorant as a known and approved remedy.

Female Mixture
P.F. 6

Aloes	gr. xxiv.
Pulv. colocynth.	gr. xxiv.
Pulv. myrrh.	gr. xxiv.
Potass. carbonatis	gr. xx.
Ext. glycyrrh. liq.	ʒij.
Ess. pulegii	℥ss.
Aquam ad	℥viij.

Mist. Ferri Amara, B.P.C.
(syn. *Mistura Chalybeata*)

Liq. ferri perchlor.	ʒv.
Syrupi	℥x.
Inf. quassiæ ad	℥xx.

Dose: ℥ss. to ʒj.

Mist. [now **Liquor**] **Ferri et Ammon. Acetatis, U.S.P.**
(*Basham's Mixture*)

Tincture of ferric chloride	40 c.c.
Diluted acetic acid	60 c.c.
Solution of ammonium acetate	500 c.c.
Aromatic elixir	120 c.c.
Glycerine	120 c.c.
Water to	1,000 c.c.

Mix the solution of acetate of ammonium [which should be alkaline in reaction] with the acid, add the tincture, then the rest of the ingredients in their order, and mix.

Dose: ℥ss.

Mistura Ferro-salina
(Sir Andrew Clark)

Magnesii sulphatis	℥j.
Potassii bitartratis	ʒj.
Ferri sulphat. exsiccat.	gr. x.
Aquæ	Oij.

Dose: A wineglassful half an hour before breakfast each morning.

Mistura Gentianæ, B.P. 1867

(B.P.C.)

Gentian-root, sliced	¼ oz.
Bitter-orange peel, cut small	30 gr.
Coriander-fruit, bruised	30 gr.
Proof spirit	2 oz.
Distilled water	8 oz.

Macerate the solids in the spirit for two hours, add the water, and macerate for another two hours; then strain through calico.

Dose: ʒss. to ʒj.

NOTE.—This is an elegant preparation, finer in flavour than the infusion, an active tonic, and keeps well.

Mist. Glycyrrhizæ Co., U.S.P.

(syn. *Brown Mixture*)

Extract of liquorice	30 grams
Syrup	50 c.c.
Acacia	30 grams
Camph. tincture of opium	120 c.c.
Wine of antimony	60 c.c.
Spirit of nitrous ether	30 c.c.
Water to	1,000 c.c.

Dissolve the liquorice and acacia in 500 c.c. of water by rubbing in a mortar, and mix with the other ingredients, washing the mortar with sufficient water to produce 1,000 c.c.

Average dose: ʒij.

This is the B.P.C. preparation of the same name.

Gonorrhœa-mixtures

I

Sodii sulphat.	ʒij.
Potass. citrat.	ʒj.
Tr. hyoscyam.	ʒj.
Glycerini	ʒj.
Aq. chloroformi ad	ʒxx.

M.

Two tablespoonfuls three times a day.

II

Copaibæ	ʒj.
Ol. cubebæ	ʒj.
Spt. æther. nit.	ʒj.
Liq. potassæ	ʒij.
Tr. hyoscyami	ʒvj.
Spt. chloroform.	ʒij.
Inf. buchu ad	ʒxx.

M.

Two tablespoonfuls three times a day.

III

Ol. santal. flav.	ʒiv.
Spt. æther. nit.	ʒj.
Liq. potassæ	ʒij.
Tr. hyoscyami	ʒj.
Inf. buchu ad	ʒxx.

M.

Two tablespoonfuls three times a day.

Gout-mixture

(Similar to Laville's)

Quinii	ʒiv.
Ext. colocynth. alcoholic.	ʒij.
Spt. rectificat.	ʒiv.
Vin. malagæ	ʒxv.

Misce et filtra.

Dose: ʒss. to ʒss. in hâlf a wine-glassful of sweetened water.

NOTE.—The above is the French formula. Quinium (Labarraque) should be used in compounding the mixture. It is the mixture known in England as quinetum, consisting of the total alkaloids of red-cinchona bark in the form of sulphates. In its absence 3 parts of quinine sulphate and 1 part of cinchonine sulphate may be used.

Gout and Rheumatic Mixtures

P.F. 37

Sodii salicylatis	ʒiss.
Potass. iodidi	ʒss.
Potass. bicarb.	ʒiij.
Vini colchici	ʒj.
Spt. chloroform.	ʒj.
Aquam ad	ʒvj.

M.

ʒss. pro dose.

P.F. 38

Potass. iodidi . . . ʒj.
Sodii salicylatis . . ʒij.
Tr. cimicifugæ . . ʒij.
Spt. chloroformi . . ʒij.
Aquam ad . . . ʒvj.

M.

Cap. ʒss. ter in die.

P.F. 39

Potass. iodidi . . . ℈ij.
Sodii salicylatis . . ʒij.
Tr. gentian. co. . . ʒij.
Aq. chloroformi ad . . ʒviij.

M.

Cap. ʒj. ter die.

Headache-mixtures

I

Ferri et quin. cit. . . ʒj.
Potass. bromid. . . ʒij.
Tr. aurant. . . . ʒj.
Syrup. . . . . ʒv.
Aq. ad . . . . ʒvj.

M. et S.

Dose: ʒss. two or three times a day.

II

Potassii bromidi . . ʒij.
Tr. aconiti . . . ʒj.
Syrupi . . . . ʒij.
Aq. ad . . . . ʒvj.

M. et S.

Dose: ʒij. in water every three hours.

Nervous-headache Mixture

Ammonii bromidi . . ʒij.
Spt. ammon. arom. . ʒiv.
Tr. hyoscyami . . ʒiij.
Aq. camphoræ ad . . ʒvj.

M.

ʒss. pro dose.

Mistura Gummosa

Acacia mucilage . . ʒiiss.
Syrup . . . . ʒiss.
Distilled water . . ʒvj.

Mix.

Hiccough-mixture

(Dr. J. W. Allen)

Ol. succini . . . ʒss.
Liq. potassæ . . . ʒj.
Tr. camph. co. . . ʒss.
Mucil. acaciæ . . . ʒij.
Aq. menth. pip. ad . ʒvj.

Fiat emulsio.

Dose: ʒj. every two hours.

Indigestion-mixtures

P.F. 60

Sodii bicarb. . . . ʒiss.
Tr. zingib. . . . ʒiss.
Ess. menth. pip. . . ʒss. ɱx.
Liq. morph. mur. . . ʒiss.
Aq. chloroform. ad . . ʒvj.

M.

P.F. 61

Tr. asafetidæ . . . ʒss.
Aquæ calcis . . . Oj.

M.

A wineglassful when in pain.

P.F. 62

Sodii bicarbonat. . . ʒij.
Acid. hydrocyan. dil. . ʒss.
Inf. gentianæ ad . . ʒvj.

M.

ʒss. t.d.s. ante cibos.

P.F. 63

Magnes. sulphat. . . ʒj.
Magnes. carbonat. . . ʒij.
Tr. capsici . . . ɱxviij.
Aq. menth. pip. ad . ʒvj.

M.

Cap. ʒss. nocte maneque.

P.F. 64

Carbon. ligni . . . ʒiv.
Glycerini . . . ʒiij.
Syr. aurantii . . . ʒss.
Aq. menth. pip. ad . ʒvj.

M.

Cap. ʒss. post cibos.

P.F. 65

Glycer. acidi carbolici	ʒij.
Syr. zingiberis	ʒvj.
Inf. anthemid. ad	℥vj.

M.

℥ss. t.d.s.

P.F. 68

Acid. nitro-mur. dil.	ʒij.
Tr. nucis vom.	ʒij.
Tr. capsici	♏xij.
Syr. zingib.	ʒvj.
Aq. chloroformi ad	℥vj.

M.

A tablespoonful thrice daily, after food.

P.F. 69

Same as No. 68 with tr. ferri perchlor. ʒij. and quinin. sulph. gr. xij. in place of the tinctures.

P.F. 70

Bismuthi carb.	ʒij.
Sodii bicarb.	ʒij.
Mucilaginis	ʒvj.
Acid. hydrocyan. dil.	ʒss.
Inf. calumbæ ad	℥vj.

M.

A tablespoonful thrice daily.

P.F. 71

Sodii bicarbonat.	ʒj.
Liq. bismuthi	ʒx.
Inf. gentianæ ad	℥vj.

M.

℥ss. t.d.s. post cibos.

P.F. 72

Sodii bicarb.	ʒij.
Liq. bismuthi	℥j.
Tr. nucis vom.	ʒij.
Inf. aurantii ad	℥vj.

M.

A tablespoonful thrice daily, after food.

P.F. 73

As No. 72 with liq. strychninæ ʒj. in place of tr. nuc. vom. and without orange.

P.F. 74

Glycer. pepsini	℥j.
Acid. hydrochlor. dil.	ʒj.
Syr. aurantii	℥ss.
Aq. ad	℥vj.

M.

A tablespoonful after food.

P.F. 75

Bismuth. carbonat.	gr. vj.
Acid. hydrocyan. dil.	♏iij.
Liq. morphin. hydrochlor.	♏v.
Glycerini	℥ss.
Aquam ad	ʒij.

Indigestion and Spasm Mixture

Potass. bicarbonatis,		
Spt. chloroformi	aa.	ʒiiss.
Liq. bismuthi		ʒx.
Sacchari usti		ʒj.
Aquam ad		Oj.

Influenza-mixtures

P.F. 63

Liq. ammoniæ	℥iss.
Tr. belladonnæ	℥iss.
Tr. cinchonæ co.	℥ivss
Aquam ad	℥lxxij.

M.

Dose : ℥ss.

P.F. 64

Quininæ sulph.	gr. xvj.
Acid. hydrobrom. dil.	ʒij.
Potass. bromid.	ʒiss.
Tr. aurantii	℥ss.
Syr. simplicis	℥ss.
Aquam ad	℥iv.

M.

A dessertspoonful to be taken every four hours.

Influenza or Cold Mixture

P.F. 16

Spt. chloroformi	ʒj.
Ammon. carb.	gr. xxxvj.
Sodii salicyl.	ʒij.
Vini ipecac.	ʒiss.
Sacchar. ust.	♏x.
Aquam ad	℥vj.

M.

One tablespoonful every three or four hours.

Iron Tonic Bitters

Ferri et quin. cit.	ʒij.
Acid. citric.	ʒiss.
Glycerini	ʒij.
Tr. aurantii	ʒj.
Tr. nucis vom.	ʒij.
Vin. xerici	ʒiv.
Aquam ad	Oj.

Dose: ʒij. three times a day in half a wineglassful of water.

Put up in 6-oz. bottles, neatly capped and labelled, to retail at 1*s.* 3*d.*

Kidney-mixture

P.F. 6

Potassii acetatis	ʒss.
Tr. hyoscyami	ʒss.
Potassii nitratis	ʒij.
Succi taraxaci	ʒj.
Infus. buchu ad	ʒviij.

Liver-mixtures

I

(Sir Andrew Clark)

Acid. nitro-mur. dil.	ʒij.
Tr. nucis vomicæ	ʒij.
Ext. cinchonæ liq.	ʒiij.
Aq. chloroformi ad	ʒvj.

Dose: ʒij. in a wineglassful of water at 11 A.M. and 6 P.M.

II

(Sir Lauder Brunton)

Acid. nitro-mur. dil.	ʒij.
Spt. chloroformi	ʒij.
Ext. cinchonæ liq.	ʒj.
Tr. aurantii	ʒss.
Aq. ad	ʒvj.

Dose: ʒss. in a wineglassful of water thrice daily, before food.

The following is also claimed to be Sir Andrew Clark's. We have ascertained that No. I. is one of the famed physician's prescriptions, but that No. III. did not originate with him.

III

Acid. nitro-hydrochlor. dil.	ʒij.
Succi taraxaci	ʒiv.
Tr. buchu	ʒiij.
Tr. podophylli	ʒj.
Spt. juniperi	ʒij.
Liq. strychninæ	mxlviij.
Syrupi	ʒvj.
Aq. ad	ʒvj.

Dose: ʒss. in water thrice daily.

P.F. 19

Acid. nit.-hydrochlor. dil.	ʒiss.
Spt. chloroformi	ʒss.
Tr. nucis vomicæ	ʒiss.
Inf. gentian. conc.	ʒiij.
Aquam ad	ʒvj.

Liver and Stomach Mixture

P.F. 4

Tr. podophyll. ammon.	ʒss.
Potass. bicarb.	ʒij.
Tr. card. co.	ʒj.
Succ. taraxaci	ʒiv.
Inf. gent. co. conc.	ʒiv.
Tr. capsici	ʒss.
Glycerini	ʒij.
Aq. chloroformi ad	ʒxxxvj.

Mist. Lobeliæ Co.

Iodide of potassium	ʒij.
Carbonate of ammonium	ʒj.
Ethereal tincture of lobelia	ʒss.
Spirit of chloroform	ʒss.
Ipecacuanha-wine	ʒj.
Infusion of senega to	ʒvj.

Dissolve and mix.

Dose: ʒss. in a wineglassful of water every four hours, for bronchitic asthma.

Lumbago and Rheumatic Mixture

Potassii iodidi	ʒj.
Spt. chloroformi	ʒij.
Inf. calumbæ ad	ʒvj.

ʒss. ter die sum.

Lumbago-mixtures

P.F. 2

Sodii salicylat. . .	ʒij.
Spt. ammon. arom. .	ʒiij.
Syr. aurant. . . .	ʒiv.
Aquam ad . . .	℥vj.

ʒss. t.d.s.

P.F. 3

Sodii salicylat. . .	ʒij.
Liq. ammon. acet. conc. .	ʒij.
Aq. chloroformi ad . .	℥vj.

Cap. ʒss. quartis horis.

McDade's Mixture or Specific

(syn. *Succus Alterans*)

Ext. smilac. liq. . .	℥xvj.
Ext. stillingiæ liq. . .	℥xvj.
Ext. lappæ min. liq. .	℥xvj.
Ext. phytolaccæ liq. .	℥xvj.
Tr. xanthoxyli . .	℥viij.

Dose: ʒj. in water thrice daily before meals, increased gradually to ʒss.

Mist. Moschi, N.H

('*Nil Desperandum*')

Spt. ammon. arom. . .	ʒiss.
Spt. æther. nitrosi . .	ʒj.
Spt. ætheris . . .	ʒiss.
Tr. moschi . . .	ʒj.
Tr. lavand. comp. . .	ʒiij.
Syr. aurantii . . .	℥ss.
Aq. camphoræ ad . .	℥viij.

Dose: A tablespoonful every three or four hours.

Mist. Magnesiæ et Asafetidæ

(U.S.P. 1880)

(*Dewee's Carminative*)

Magnes. carb. . .	ʒvj.
Tr. asafetidæ . . .	ʒx
Tr. opii	♏lxxv.
Sacchari albi . . .	ʒiss.
Aq. ad	℥xv.

Rub the carbonate and the sugar in a mortar with the tinctures, then gradually add the water.

Dose: ʒj.

Mixture for Nausea and Sickness

(Sir Douglas Powell)

Sodii bicarbonatis . .	ʒss.
Acid. hydrocyanic. dil. .	♏xij.
Tr. strophanthi . .	♏xij.
Aq. ad	℥iss.

M.

Dose: ʒj. with a tablespoonful of soda-water every four hours.

Neuralgic Mixtures

I

Tr. gelsem. . . .	ʒij.
Tr. cardam. co. . .	℥ss.
Quininæ sulph. .	gr. xxiv.
Acid. hydrobrom. dil. .	ʒiij.
Aq. ad	℥iij.

M.

Dose: ʒj. in half a wineglassful of water every three or four hours till relieved; but more than four doses should not be taken by an adult in a day.

II

Ammon. chloridi . .	ʒij.
Tr. aconiti . . .	℥ss.
Syrupi	℥ss.
Aq. ad	℥vj.

M. et S.

Dose: A sixth part thrice daily.

III

Croton. chloral. hydrat. .	ʒj.
Ammon. bromid. . .	ʒij.
Tr. gelsemii . . .	ʒij.
Spt. chloroformi . .	ʒij.
Glycerini . . .	℥ss.
Aq. ad	℥vj.

Rub the croton-chloral hydrate with the glycerine, and shake with 2 oz. of water and the tinctures, add the bromide dissolved in 2 oz. of water, shake, and make up.

Dose: ℥ss. every four hours.

IV

Quininæ sulphat.	gr. xv.
Antipyrin.	ʒj.
Tr. cimicifugæ	ʒij.
Acid. hydrobrom. dil.	ʒij.
Tr. aurantii	ʒiss.
Aq. ad	ʒvj.

M. et filtra.

Dose : ʒss., to be repeated thrice at intervals of four hours.

P.F. 137

Butyl. chloral. hydratis	gr. xvj.
Ferri et quin. cit.	gr. lxiv.
Tr. nucis vom.	ʒj.
Tr. aurantii	ʒiss.
Tr. gelsemii	ʒij.
Aq. flor. aurant. trip.	ʒiss.
Chloroformi	ɱxij.
Aquam ad	ʒviij.

Cap. ʒj. 3tis horis.

P.F. 138

Ammon. chlorid.	ʒij.
Liq. ammon. acet.	ʒvj.
Tr. gelsemii	ʒj.
Spt. chloroformi	ʒj.
Spt. camphor.	ɱxx.
Cocci cacti	q.s.
Aq. ad	ʒvj.

ʒss. pro dose.

P.F. 139

Quinin. sulphat.	ʒss.
Inf. quassiæ ad	ʒvj.

ʒss. q.q.h. s.

P.F. 140

Tr. quinin. ammon.	ʒvj.
Mucil. tragac.	ʒj.
Tr. capsici	ɱvj.
Aq. chloroformi ad	ʒvj.

A sixth part for a dose.

P.F. 141

Quinin. sulph.	gr. xij.
Acid. sulph. dil.	ʒij.
Tr. nucis vom.	ʒj.
Syr. aurantii	ʒvj.
Aq. chloroformi ad	ʒvj.

A tablespoonful every four hours.

P.F. 142

Potass. bromid.	ʒiss.
Ammon. bromid.	ʒiss.
Ammon. muriat.	ʒss.
Spt. chlorof.	ʒiss.
Tr. aurant.	ɱxx.
Spt. ammon. co.	ʒss.
Glycerini	ʒvj.
Aq. camph. ad	ʒviij.

ʒss. pro dose.

P.F. 143

Quinin. sulph.	gr. xxiv.
Acid. nit.-mur. dil.	ʒij.
Tr. nuc. vom.	ʒij.
Syr. zingiberis	ʒvj.
Aq. chloroformi	ʒvj.

A tablespoonful every four hours.

P.F. 144

Phenazoni	gr. lxiv.
Syr. ferri phosph. co.	ʒij.
Syr. Eastoni	ʒj.
Syr. hypophosphit. co.	ʒj.
Spt. chloroformi	ʒj.
Aquam ad	ʒxvj.

Neuralgia and Tic Mixture

P.F. 7

Croton. chloral.	ʒj.
Tr. gelsemii	ʒiss.
Aquam ad	ʒvj.

Two teaspoonfuls every four hours.

Neuralgia and Toothache Mixture

Quinin. sulph.	ʒvj.
Potass. bromidi	ʒxiiiss.
Chloral. hydrat.	ʒvj.
Acid. hydrobrom. dil.	ʒiss.
Syr. aurantii	Oss.
Glycerini	Oss.
Liq. cocci	ʒj.
Aq. chloroformi ad	Cong. j.

Mistura Olei Ricini

(Sir Lauder Brunton)

Ol. ricini	ʒss.
Pulv. acaciæ	q.s.
Tr. opii	ɱx.–ɱxxx.
Aq. menth. pip.	ʒiss.

Dose : ʒj. to ʒij. three or four times a day for chronic dysentery.

Mistura Ol. Santali, B.P.C.

Ol. santali	ʒv.
Mucil. acaciæ.	ʒx.
Aq. cinnamomi ad	ʒxx.

Dose: ʒss. to ʒj.

Mistura Olei Picis, N.F.

Purified extract of liquorice	ʒij.
Oil of tar	ʒj.
Sugar	ʒviij.
Chloroform	ʒiiss.
Oil of peppermint	♏XLV.
Alcohol (95-per-cent.)	ʒv.
Water to	ʒxxxij.

Add the extract and sugar to 16 oz. of water, contained in a covered vessel, and heat the mixture to boiling until the extract and sugar are dissolved. Then add the oil of tar, cover the vessel, and allow the contents to cool, stirring occasionally. Next add the chloroform and oil of peppermint, previously dissolved in alcohol, and, lastly, enough water to make 32 oz.

Mist. Ol. Terebinthinæ, N.H.

Ol. terebinthinæ	♏xv.
Vitell. ovi	q.s.
Mucilag. acaciæ	ʒj.
Tr. cardam. comp.	ʒj.
Aq. menthæ pip. ad	ʒj.

Misce pro dose.

Mixtura Oleosa Balsamica, Ph.G.

(syn. *Hoffmannscher Lebensbalsam; Balsamum Vitæ Hoffmanni*)

Oil of lavender	ʒj.
Oil of cloves	ʒj.
Oil of cinnamon	ʒj.
Oil of thyme	ʒj.
Oil of lemon	ʒj.
Oil of mace (essential)	ʒj.
Peruvian balsam	ʒss.
Alcohol (90-per-cent.) to	ʒxxx.

All by weight.

Mix, shake occasionally every day for about a week, and filter through paper damped with spirit and sprinkled with fullers' earth.

Mist. Pectoralis, N.H.

Vini ipecacuanhæ	♏v.
Vini antimonialis	♏v.
Liq. morphin. hydrochlor.	♏v.
Oxymellis	♏v.
Syr. scillæ	♏xx.
Tr. cardam. comp.	♏xx.
Aquam ad	ʒj.

Misce pro dose.

Mist. Pepsini Co., B.P.C.

Glycer. pepsin. fort.	j.
Liq. strychnin. hydrochl.	ʒij.
Acid. nitro-hydrochlor. di.	ʒv.
Glycerin.	ʒij.
Tr. persionis	ʒj.
Aq. destillat. ad	ʒxx.

Dose: ʒij. to ʒss.

Pepsin-and-Bismuth Mixture

Glycer. pepsini	ʒiij.
Liq. bismuth.	ʒiv.
Tr. capsici	ʒj.
Tr. gentian. co.	ʒj.
Sacchari usti	q.s.
Aq. destillat. ad	ʒxx.

Mistura Phosphori

(Baily)

Tr. phosphori	♏xxxij.
Glycerini	ʒiv.
Spt. chloroformi	ʒij.
Pulv. tragacanth.	gr. vj.
Aq. destillat. ad	ʒviij.

Put the tragacanth in a dry bottle and pour the spirit and tincture upon it; mix, add the glycerine and 5 oz. of water, and shake until an emulsion is formed. Then make up to the required volume.

Dose: ʒj., which equals phosphorus gr. $\frac{1}{50}$.

To each ounce may be added (1) Tr. nucis vom. ♏x. (2) Tr. nucis vom. ♏vj., quin. hydrochlor. gr. j. (3) Ferri et quin. cit. gr. iij., tr. nucis vom. ♏vj.

Tr. Phosphori is a solution of 1 gr. of phosphorus in 500 minims of a mixture of equal parts of absolute alcohol and oil of lemon, which is an excellent solvent for phosphorus.

Dose: Two to six minims.

Mistura Pulmonica (Hoff)

Arsenious acid .	0·1 gram
Potassium carbonate	0·2 gram
Cinnamic acid . .	0·3 gram
Distilled water .	5·0 grams

Dissolve in a flask with the aid of heat and add

Brandy . . .	2·5 grams

and add

Extract of opium .	0·3 gram

dissolved in

Distilled water .	2·5 grams

After making a solution of the whole, filter.

Directions.—At first take six drops after dinner and supper, gradually increasing to twenty-two drops.

Mist. Quassiæ c. Ferro et Mag. Sulph.

Liq. ferri perchlor. .	ʒiij.
Magnes. sulphat. . .	ʒvj.
Inf. quassiæ ad . .	℥xij.

Dose: ℥ss. thrice daily.

Mist. Quininæ et Ferri

I

Citrate of iron and quinine . . .	℈viij.
Rectified spirit . .	℥ss.
Orange-flower water (recent)	ʒiij.
Chloroform-water to .	℥viij.

Mix the waters, and dissolve the citrate in the mixture; then add the spirit, and filter twice through English grey filtering-paper.

Dose: For an adult a small dessertspoonful in a wineglassful of water three times a day, half an hour before meals. For children of from four to nine years half a teaspoonful, and above that age a whole teaspoonful, in half a wineglassful of water, twice or three times a day, half an hour before meals.

NOTE.—It is a matter of importance not to filter this mixture through French grey paper. Its appearance is thereby considerably affected. This retails in 8-oz. bottles at *2s. 6d.*, a price which should be adhered to, as the mixture is very elegant.

II

Quininæ sulphat. . .	ʒiss.
Acid. nitric. dil. . .	ʒij.
Tr. ferri perchloridi .	ʒij.
Glycerini . . .	ʒj.
Aq. chloroformi ad . .	℥xx.

Dose: ʒij. in a wineglassful of water thrice daily.

Keeps well, the nitric acid preventing deposit of iron. Retails at *1s. 6d.* to *2s.* for 8-oz. bottle.

III

Sulphate of quinine .	ʒiij.
Strong solution of perchloride of iron . .	ʒj.
Spirit of chloroform .	℥ij
Tincture of calumba .	ʒij.
Syrup	℥iv.
Glycerine . . .	℥iv.
Orange-flower water .	℥xxiv.
Distilled water to . .	℥lxiv.

Mix the iron solution with 10 oz. of the orange-flower water, and in this dissolve the quinine. Then add the other ingredients, making up to 64 oz., as specified in the formula. Set aside for twenty-four hours, and filter three times through grey filtering-paper. Thus treated, the mixture keeps permanently bright.

Dose: ʒij. to ℥ss. in half a wineglassful of water three times a day.

IV

Quininæ et ferri cit.	℈v.
Tr. limonis	ʒss.
Tr. aurantii	ʒss.
Acid. salicylic.	gr. iv.
Aq. ad	ʒvj.

M. et filtra.

Dose: Same as No. II. This mixture also keeps well, and is more agreeable than No. II.

Mistura Quininæ cum Ferro, B.P.C., is quin. sulph. gr. j., liq. ferri perchlor. ♏x., aq. ad ʒj.

Mistura Quininæ

(Free from bitterness)

Quinin. sulph.	gr. x.
Acid. sulph. dil.	♏x.
Saccharin. solub.	gr. ij.
Aq. menth. pip. ad	ʒiv.

NOTE.—Fluid extract of yerba santa is the best covering for the taste of quinine.

Mistura Quininæ, B.P.C., is quin. sulph. gr. j., acid. sulph. dil. ♏j., tr. aurantii ♏x., aq. ad ʒj.

Aromatic Quinine-and-Iron Tonic

P.F. 6

Tr. ferri perchloridi	ʒiij. ʒiij.
Quinin. sulphatis	gr. lxx.
Aq. chloroformi ad	ʒlxxij.

Quinine-and-Iron Tonics

P.F. 73

Ferri et quininæ cit.	ʒij.
Acid. citric.	ʒj.
Spt. chloroformi	ʒiss.
Glycerini	ʒv.
Aquam ad	ʒLX.

P.F. 74

Ferri et quininæ cit.	ʒj.
Ammon. bromid.	ʒj.
Tr. nucis vom.	ʒj.
Syr. aurant.	ʒss.
Inf. calumb. conc.	ʒss.
Aq. chloroformi ad	ʒvj.

P.F. 75

Ferri et quininæ cit.	℈iv. gr. iv.
Acid. citric.	gr. xij.
Ligni quassiæ	gr. xviij.
Tr. limonis	ʒij.
Syrupi	ʒss.
Aquam ad	ʒvj.

M.

P.F. 76

Quininæ sulphat.	gr. xcvj.
Liq. ferri perchlor.	ʒij.
Glycer. aurantii	ʒxv.
Inf. quassiæ ad	ʒxcvj.

M.

P.F. 77

Ferri et quin. cit.	ʒij.
Magnes. sulphat.	ʒv.
Inf. chiratæ conc., Inf. quassiæ conc.	aa. ʒv.
Aq. chloroformi ad	ʒLX.

M.

Mist. Rhei Ammoniat., N.H.

Pulv. rhei	gr. iv.
Ammonii carbonat.	gr. ij.
Inf. quassiæ	ʒss.
Aq. menthæ piperitæ	ʒss.

Misce pro dose.

Mist. Rhei Rubra

(Dr. Brooks Muriel)

Sodii bicarbonat.	ʒi.
Pulv. rhei	ʒj.
Magnes. carbonat.	ʒij.
Potass. carbonat.	℈j.
Spt. ammon. arom.	ʒij.
Spt. chloroformi	ʒiv.
Ol. anisi	♏xx.
Ol. carui	♏xv.
Syr. simplicis	ʒiv.
Aq. destill. ad	ʒviij.

Mix the powders in a mortar, add 2 oz. of water gradually, then the syrup and the oils dissolved in the mixed spirits. Pour into a bottle, and wash out the mortar with the rest of the water to make up to 8 oz.

Dose: ʒss. to ʒj. or more when required as a stomachic.

Mistura Rhei et Sodæ

Sodii bicarb.	ʒiij.
Pulv. rhei	ʒij.
Ess. menth. pip. (1 in 10)	♏xv.
Syrupi	℥ij.
Aq. ad	℥iv.

Mix the powders with 1 oz. of water and the essence, add the syrup, and make up to 4 oz.

Dose: ʒss. to ʒj.

Mist. Rhei c. Sodâ, B.P.C., is made with pulv. rhei gr. v., sodii bicarb. gr. x., aq. carui ad ℥j.

Mistura Rhei Composita, N.F.

(syn. *Squibb's Rhubarb-mixture*)

Fluid extract of rhubarb	ʒiij.
Fluid extract of ipecac.	ʒss.
Sodium bicarbonate	ʒv. ℈iiss.
Glycerine	℥viij.
Peppermint-water to	℥xxxij.

Dissolve the sodium bicarbonate in about 16 oz. of peppermint-water, then add the fluid extracts and glycerine, and, lastly, enough peppermint-water to make 32 oz.

Mistura Santali Comp.

I. (*Nisbet's Specific; Spt. Santali Co., B.P.C.*)

Olei santali	ʒxiiss.
Olei cassiæ	ʒiss.
Olei pimentæ	♏xl.
Spiritus rectificati	ʒiiiss.

Dose: ʒss. to ʒj. in water or milk thrice daily.

II. (*Spt. Santali Co. c. Morphinâ, B.P.C.*)

Ol. santal. flav.	℥iv.
Ol. pimentæ	ʒiv.
Ol. cassiæ	ʒij.
Morph. mur.	gr. ix.
Spt. rectificat. ad	℥xij.

Dose: As above.

NOTE.—Both of these formulas were obtained from the originator of the preparation, the late Mr. William J. Nisbet, an Edinburgh chemist who claimed to be the introducer of sandalwood oil as a remedy for gleet and gonorrhœa. The first formula is the one generally followed, but there are many others, and it is probable that the correct formula was never revealed by Nisbet, except to Messrs. J. F. Macfarlan & Co., of Edinburgh, to whom he sold it, and who still manufacture the preparation. Formulas with oils of cubebs and copaiba are erroneous.

Mistura Salina, B.P.C.

Liq. ammon. acet.	℥viiss.
Potassii nitrat.	℈x.
Spt. æther. nit.	ʒx.
Aq. destill. ad	℥xx.

Dose: ℥ss. to ʒj.

Mixtures for Rheumatism

I

Sulphate of quinine	℥ss.
Iodide of potassium	ʒij.
Colchicum-wine	ʒj.
Tincture of orange	℥ss.
Chloroform-water to	℥viij.

Rub the quinine with the wine, adding a few drops of dilute sulphuric acid to assist solution; then add the tincture, water, and finally the iodide of potassium.

Dose: ʒij. twice a day, in a wineglassful of water.

II

Sodii salicylat.	ʒiss.
Potassii citrat.	ʒj.
Vin. colchici	ʒiss.
Tr. gentianæ co.	℥ss.
Aq. chloroformi ad	℥vj.

Dose: ℥ss. thrice daily.

NOTE.—The first mixture is for chronic cases, the second for those that are more acute. A dose of aperient mineral water, or pil. col. c. hydrarg. gr. v. should be taken twice weekly to prevent colchicum accumulation.

Rheumatic Mixtures

P.F. 13

Sodii salicylatis . .	ʒij.
Inf. gentian. ad . .	℥viij.

Cap. ℥ss. ter die.

P.F. 14

Magnes. carb. . .	ʒij.
Magnes. sulphatis . .	ʒiij.
Aq. menthæ pip. ad .	℥vj.

℥ss. t.d.s.

P.F. 15

Potass. nitratis . .	ʒij.
Magnes. sulphatis . .	ʒiij.
Potassii iodidi . .	ʒss.
Tr. hyoscyami . .	ʒiv.
Aq. chloroformi ad . .	℥vj.

℥ss. pro dose.

P.F. 16

Sodii salicylatis . .	ʒiij.
Potass. bicarb. . .	ʒij.
Vin. colchici . . .	ʒiss.
Tr. cimicifugæ . .	℥ss.
Spt. chloroformi . .	ʒj.
Inf. gentianæ co. ad .	℥vj.

P.F. 17

(syn. *Strengthening Mixture*)

Ammon. carb. . .	ʒss.
Ext. cinchon. liq. . .	ʒiij.
Syr. aurantii . . .	ʒiv.
Aq. chloroformi ad . .	℥vj.

℥ss. pro dose.

Misturæ Sarsæ Compositæ

(syn. *Blood-purifying Mixtures, Iodised Blood-mixtures, Blood-tonic, &c.*)

I

Iodide of potassium .	gr. xxxvj.
Chlorate of potassium .	gr. xxx.
Fowler's solution . .	♏xxiv.
Spirit of chloroform .	ʒiij.
Compound decoction of sarsaparilla to . .	℥vj.

II

Potassii iodidi . .	ʒj.
Liq. potassæ . . .	ʒiss.
Dec. sarsæ co. conc. .	℥iss.
Aq. chloroformi ad . .	℥viij.

Dose of either : ℥ss. thrice a day.

III

Potassii iodidi . .	♐j.
Liq. taraxaci . . .	ʒiiss.
Ol. sassafras . . .	♏v.
Mist. gentianæ co. . .	℥iss.
Liq. potassæ . . .	ʒss.
Dec. sarsæ co. ad . .	℥viij.

Shake the oil with the mist. gent. co., add the liquor potassæ ; dissolve the iodide in a few ounces of the decoction, mix with the previous solution, then add the rest of the ingredients to make an 8-oz. mixture. Filter through a wetted filter-paper.

Dose : ℥ss. in water thrice daily.

Mist. Senegæ, N.H.

Ammonii carbonat. . .	gr. v.
Spt. chloroformi . .	♏x.
Syrupi simplicis . .	ʒss.
Decoct. senegæ ad . .	ʒj.

Misce pro dose.

Mist. Sodii Co., B.P.C.

(syn. *Peacock's Stomachic Mixture*)

Sodii bicarbonat. . .	♐x.
Rad. gentian. contus. .	♐v.
Rad. rhei contus. . .	♐ij.
Zingib. contus. . .	♐j.
Aq. menth. pip. ad .	℥xx.

Macerate twenty-four hours, press, strain, and wash the strainer with peppermint-water to 20 oz.

Dose : ℥ss. to ʒj.

Mistura Sodii Benzoatis

(Dr. Golding Bird)

Sodii carbonatis . .	ʒiss.
Acidi benzoici . .	♐ij.
Sodii phosphatis . .	ʒiij.
Aq. ferventis . . .	℥iv.

Solve et adde

Aq. cinnamom. . .	℥viiss.
Tr. hyoscyami . .	℥ss.

Dose : ʒj. thrice daily for gravel.

Mist. Sodii et Gentianæ, N.H.

Sodii bicarbonat. . .	gr. x.
Tr. cardam. comp. . .	♏xx.
Inf. gentianæ ad . .	ʒj.

Misce pro dose.

Mistura Sodæ et Menthæ, N.F.
(*Soda Mint*)

Sodium bicarbonate .	ʒiss.
Aromatic spirit of ammonia	ʒiiss.
Spearmint-water to . .	ʒxxxij.

Dissolve the bicarbonate of sodium in about 24 oz. of water, add the spirit, and make up to 32 oz. with spearmint-water.

Mist. Sodii c. Magnesia
(Dr. Brooks Muriel)

Mag. carb. pond. . .	ʒxx.
Sod. bicarb. . . .	ʒxx.
Spt. chlorof. . . .	ʒx.
Spt. ammon. co. . .	ʒiiss.
Aq. carui . . .	Oj.
Aq. destil. ad . . .	Oiv.

M.

Dose: ʒss. to ʒj. For a pick-me-up add acid. hydrocy. dil. ♏iij. to ʒj. of the mixture and take as a draught.

Mist. Sodii et Rhei, N.H.

Sodii bicarbonat. . .	gr. x.
Pulv. rhei . . .	gr. x.
Spt. ammon. arom. .	♏xx.
Aquam ad . . .	ʒj.

Misce pro dose.

Spermatorrhœa-mixtures
(Dr. Hargreave)

I

Potassii bromidi . .	ʒss.
Tr. gelsemii . . .	ʒij.
Ext. ergotæ liq. . .	ʒij.
Tr. belladonnæ . .	ʒiss.
Syr. zingib. . . .	ʒss.
Aq. ad	ʒviij.

Dose: ʒj. twice daily and at bedtime.

II

Potassii bromidi . .	ʒss.
Tr. hamamelidis . .	ʒij.
Tr. cocæ . . .	ʒss.
Tr. belladonnæ . .	ʒj.
Syr. zingiberis . .	ʒss.
Aq. camphoræ ad . .	ʒviij.

Dose: As No. I.

NOTE.—The second mixture is to be given after the first begins to lose its effect.

Stomachic Mixtures

I. (Dr. T. H. Tanner)

Ac. nit.-mur. dil. .. .	ʒij.
Ac. hydrocyan. dil. .	♏xxv.
Tr. arnicæ . . .	ʒj.
Tr. gent. co. . . .	ʒj.
Inf. sennæ ad . . .	ʒviij.

Dose: ʒss. two or three times a day in dyspepsia with sluggish liver.

II

Glycer. pepsin. acid. .	ʒj.
Tr. nucis vom. . .	ʒss.
Acid. nitro-hydrochlor. dil.	ʒj.
Mist. gentian. co. ad .	ʒviij.

Dose: ʒss. in half a wineglassful of water immediately after meals, for eructations and feeble indigestion with constipation.

III

Sodii bicarbonatis . .	ʒj.
Ammon. chloridi . .	ʒss.
Tr. gentian. co. . .	ʒj.
Inf. aurant. co. conc. .	ʒj.
Aq. ad	ʒviij.

Dose: ʒij. in half a teacupful of warm water thrice daily, an hour after food, for excessive acidity and nervousness.

Mist. Strychninæ Acida, B.P.C.

Liq. strych. hydrochlor. .	ʒj.
Acid. nitro-hydrochlor. dil.	ʒv.
Glycerini	ʒx.
Inf. gentian. co. ad . .	ʒxx.

Dose: ʒss. to ʒj.

Strengthening Mixtures

P.F. 1

Ferri sulphat.	ʒss.
Magnes. sulphat.	ʒiij.
Acid. sulph. dil.	ʒij.
Inf. quassiæ ad	℥vj.

ʒss. t.d.s. post cib.

P.F. 2

As No. 1 *plus* tr. nuc. vom. ʒij. and with aq. chlorof. in place of quassia

P.F. 3

Ferri ammon. cit.	ʒij.
Ammon. carbonat.	ʒss.
Aq. chloroform. ad	℥vj.

ʒss. t.d.s.

P.F. 4

Add tr. nuc. vom. ʒj. to No. 3.

P.F. 5

Add bismuth. carb. ʒij. to No. 3.

P.F. 6

Ferri et quin. cit.	ʒij.
Spt. chloroformi	ʒij.
Syr. aurantii	ʒss.
Aquam ad	℥vj.

P.F. 7

Quinin. sulphat.	gr. xij.
Acid. sulphuric. dil.	ʒij.
Tr. aurantii	ʒiij.
Aq. chloroformi ad	℥vj.

P.F. 8

Quinin. sulphat.	gr. xij.
Ferri sulphat.	gr. xxiv.
Acid. sulph. dil.	ʒss.
Inf. quassiæ ad	℥vj.

P.F. 9

Tr. ferri perchlor.	ʒij.
Acid. nitro-mur. dil.	ʒij.
Tr. nucis vom.	ʒj.
Syr. aurantii	ʒvj.
Aq. chloroformi ad	℥vj.

P.F. 10

Tr. ferri perchlor.	ʒij.
Spt. chloroformi	ʒij.
Glycerini	ʒiij.
Aquam ad	℥vj.

Dose of each of above : ʒss. t.d.s.

P.F. 11

Rheumatic Mixture, P.F. 17, p. 711.

Mist. Taraxaci Acida, B.P.C.

Succ. taraxaci	ʒiiss.
Acid. nitro-mur. dil.	♏200
Spt. chloroformi	♏200
Inf. calumbæ ad	℥xx.

Dose : ʒss. to ʒj.

Mist. Taraxaci et Podophylli

('*Taraxacum and Podophyllin*')

I

Podophyllin.	gr. vj.
Spt. ammon. arom.	ʒvj.

Solve et adde

Succi taraxaci	ʒiss.
Tr. zingiberis	ʒij.
Dec. aloes co. ad	℥vj.

Dose : ʒij. to ʒiv.

II. (Baily's Ph. Ph.)

Tr. podophyllini	ʒj.
Succi taraxaci	ʒvj.
Acid. nitro-hydroch. dil.	ʒj.
Spt. chloroformi	ʒiss.
Tr. chiratæ	ʒij.
Aq. destil. ad	℥vj.

Dose : ʒj. three times a day.

NOTE.—The first mixture purely a liver-stimulant and intestinal tonic, and quickly gets these organs into healthy action. The second is also a hepatic stimulant, and where a stomachic corrective is required it is to be preferred.

Mist. Terebinthinæ Chiæ

I

Professor Clay's

Ethereal solution of Chian turpentine (1 in 2)	ʒss.
Tragacanth mucilage	ʒiv.
Syrup	ʒj.
Sublimed sulphur	℈j.
Water to	℥xvj.

Dilute the mucilage with as much water, throw in the turpentine

solution, and agitate gently; add the remainder of the water and the sulphur, previously rubbed down with the syrup. Mix.

Dose: ʒj. three times a day.

II

Martindale's Modification

Powdered acacia	ʒviij.
Powdered tragacanth	℈v.
Chian turpentine	ʒviij.
Ether	ʒj.
Distilled water to	℥xvj.

Dissolve the turpentine in the ether and add the solution to the powders mixed in a dry mortar; then add boldly 2 oz. of water, triturate until emulsified, and add gradually 11 oz. of water. Stir frequently until the ether has evaporated, transfer to a bottle, and add water to 16 oz.

ʒj. = tereb. chiæ ʒss.

Dose: ʒiij. daily in divided doses after food, gradually increased to ʒix.

NOTE.—This mixture was introduced in 1880 by the late Professor Clay, of Birmingham, as a remedy for cancer. Sulphur was considered a necessary ingredient at first, but, like the turpentine, it gives no benefit in cancer.

Tic and Neuralgic Mixtures

P.F. 46

Ammonii chloridi	ʒiij.
Tr. gelsemii	ʒiss.
Inf. gentian. conc.	ʒiss.
Aq. chloroformi dupl.	℥vj.

M.

Dose: One tablespoonful in water every three or four hours.

P.F. 48

Quinin. sulphatis	gr. xlviij.
Acid. sulphuric. dil.	ʒj.
Liq. morph. hydrochlor.	ʒvj.
Spt. chloroformi	ʒvj.
Aquam ad	℥xxiv.

M.

Tonic Mixtures

I

(Dr. Milner Fothergill)

Quininæ sulphat.	gr. xvj.
Liq. strychninæ	ʒij.
Potassii citratis	ʒiss.
Tr. ferri perchlor.	ʒv.
Syrupi	ʒj.
Aquam ad	℥iv.

Dissolve the quinine in 1 oz. of water with the aid of a sufficiency of dilute hydrochloric acid, add the liquor and tincture, and, lastly, the remainder of the ingredients mixed together.

Dose: ʒj. three times a day.

II

(Sir Felix Semon)

Syr. ferri phosphat.	℥iss.
Gly. pepsin. acid. (B. & R.)	℥iss.
Liq. arsenicalis	♏xxxvj.
Liq. strychninæ	♏xxiv.
Aq. ad	℥vj.

M.

Dose: ℥ss. thrice daily, after meals.

Messrs. Bullock & Reynolds' glycerine of pepsin is meant.

MISTURÆ PRO TUSSI

Cough or expectorant mixtures are very much in demand, and there is a great variety of them to choose from. Most of the formulas which are gathered here are the prescriptions of medical men, and are occasionally asked for by their names irrespective of the kinds of cough for which the prescriptions were originally written. Expectorant-mixtures are those which excite the secretion in the bronchial tubes—popularly speaking, 'loosen the phlegm.' Ipeçacuanha, senega, and squill are the best examples of expectorants. Opium decreases the secretion, yet it is often found in the same mixture with active expectorants. As there are different kinds of coughs, a certain mixture may be found better adapted to produce an amelioration of one patient's condition than another's. Hence a 'panacea,' which looks delightfully potent on paper, and sets forth in glowing terms that a cure will be effected in a few doses, may sometimes be the very medicine which should be avoided in a particular case. But when the subject of the cough is a person who generally enjoys good health, the disorder has probably arisen through exposure to cold, wet feet, or other preventible causes. In such cases any remedy which exerts a soothing effect on the mucous membrane of the air-passages is capable of alleviating the spasm. It is for the latter class of coughs that the stock mixture, linctus, and syrup acquire their reputation.

I

Acidulated Glycerine for Coughs

'Elegant and effectual for the relief of tickling cough.'

Liq. morph. hydrochl.	ʒv.
Acid. nitric. dil.	ʒxxvij.
Glycerini	ʒxx.
Aq. flor. aurant. conc.	ʒv.
Aq. ad	ʒxl.

M.

Dose: ʒj. with a tablespoonful of water three or four times a day.

II

Aniseed Cough-balsam

Ol. anisi	ʒss.
Spt. chloroformi	ʒj.
Tr. cinnamomi	ʒj.
Tr. camph. co.	ʒiv.
Tr. senegæ	ʒss.
Oxymel. scillæ	ʒvj.
Syr. tolutani	ʒvij.

Dissolve the oil in the spirit of chloroform, add the mixed tinctures, then the oxymel, and lastly

the tolu syrup. It may be coloured with caramel.

Dose: ʒj. three or four times a day.

III

Dr. Abercrombie's Cough-mixture

(*Mistura Scillæ et Opii, B.P.C.*)

Tr. opii	mCLX.
Syrup. scillæ	ʒij.
Aq. cinnam.	ʒiv.
Aq.	ʒiv.

Sig.: ʒss. pro dose.

IV

Black-currant Cough-elixir

Potass. nitrat.	ʒij.
Aq. rosæ	ʒvj.
Chlorodyni	ʒiij.
Vin. ipecac.	ʒiv.
Ext. glycyrrh. liq.	ʒiv.
Liq. papav. alb.	ʒiv.
Oxymel. scillæ	ʒXL.

Dissolve a pound of black-currant jelly in a pint of water, and, having made the above into a mixture *sec. art.*, mix the two, set aside for four days, and decant the clear mixture.

Dose: ʒj. three times a day.

V

Brompton Cough-mixture

(*Mist. Acidi Hydrocyanici Co., B.P.C.*)

Ac. hydrocyanic. dil.	ʒss.
Liq. morph. hydrochlor.	ʒiss.
Syr. tolutan.	ʒj.
Inf. rosæ acid. ad	ʒvj.

Dose: ʒss. in a wineglassful of water three or four times a day.

VI

Chlorodyne Cough-mixture

Chlorodyni	ʒij.
Vin. ipecac.	ʒiij.
Glycerini	ʒvj.
Aq. ad	ʒvj.

Dose: ʒij. three or four times a day. The bottle to be well shaken before pouring out the dose.

VII

Calf's-foot Cough-jelly

Morph. acet.	gr. LV.
Acid. citric.	gr. ccxvj.
Aquæ	ʒxxx.
Gelatini	ʒiij.
Glycerini	ʒlxxij.
Tr. tolu.	ʒss.
Spt. rectificat.	ʒss.
Vin. ipecac.	ʒj.
Ess. vanillæ	ʒij.
Sacch. ust.	q.s.

M.

Soak the gelatin in 20 oz. of water; when soft add the glycerine, and dissolve by the heat of a water-bath; skim. Dissolve the acid and morphine acetate in 10 oz. of water. Add to it the tincture, spirit, wine, essence, and colouring, mix with the glycerine, and bring the weight up to 108 oz. with warm water. Strain and pour into 2-oz. w.m. bottles.

Dose for adults: ʒj. to ʒij. three times a day.

VIII

Christison's Cough-mixture

Syrupi scillæ	ʒij.
Aq. menthæ pip.	ʒij.
Tr. opii ammoniat.	ʒss.
Tr. lavandulæ co.	ʒss.
Syrupi	ʒj.

Dose: ʒss. three or four times a day.

NOTE.—This is the formula given in Christison's 'Dispensatory,' 1842, p. 839. It is considerably played upon by Scotch chemists, liberties being taken with the ingredients and quantities.

IX

Dr. Milner Fothergill's Mixture

(*Mistura Scillæ, B.P.C.*)

Syr. scillæ	ʒj.
Acid. hydrobrom. dil.	ʒss.
Spirit. chloroformi	ʒss.
Aq. ad	ʒviij.

Dose: ʒss. three times a day; to be sipped slowly.

X

Hop Cough-mixture

Vin. ipecac.	ʒj.
Tr. lupuli	ʒiij.
Syr. scillæ	ʒvj.
Spt. æther. nit.	ʒvj.

M.

Dose: A teaspoonful to be taken in water every four hours.

XI

Dr. Suckling's Bronchitis-mixture

Ammonii carbonat.	gr. xxiv.
Tr. scillæ	ʒij.
Tr. camph. co.	ʒij.
Inf. senegæ ad	ʒviij.

M.

An eighth part every four hours.

XII

Stock Mixture, without Opium

Chloral. hydrat.	℈v.
Acet. ipecac.	ʒij.
Syr. tolutani	ʒiij.
Aq. camph.	ʒiij.
Syr. pruni virgin. ad	ʒxx.

M.

Put this up in 4-oz. round-cornered bottles. Label—'Balsamic Cough-linctus—free from opium. It is a remarkably soothing preparation. Dose: A teaspoonful or more in half a wineglassful of water three or four times a day.'

XIII

White Cough-mixture

Syr. scillæ	ʒj.
Mucil. acaciæ	ʒvj.
Vin. ipecac.	ʒiij.
Aq. ad	ʒvij.

Mix and pour the following mixed tinctures into the bottle:—

Tr. tolutan.	ʒij.
Tr. camph. co.	ʒvj.

Shake gently.

Dose: ʒij. every three or four hours, or when the cough is troublesome.

Shake the bottle.

XIV

Dr. Theodore Williams's Mixture

Liq. morphinæ acetat.	ʒj.
Spt. chloroformi	ʒj.
Succi limonis	ʒss.
Mucil. acaciæ ad	ʒij.

M.

Dose: ʒj. when the cough is troublesome.

XV

Wilcox's Bronchitis-mixture

Apomorphin. mur.	gr. ss.
Potassii bromid.	ʒss.
Tr. sanguinar.	ʒj.
Aquæ	ʒvj.
Syr. tolutan. ad	ʒiv.

M.

Dose: ʒj. in a glass of water every three hours.

XVI

Dr. J. Davis's Mixture

Carbonate of ammonium	gr. xvj.
Syrup of tolu	ʒss.
Tincture of squill	♏xl.
Compound tincture of cinchona	ʒij.
Spirit of chloroform	♏iv.
Rose-water	ʒij.

Mix.

Dose: ʒj. every four hours as a stimulating expectorant in bronchitis and pneumonia.

XVII

Dr. W. T. Caldwell's Bronchitis-mixture

Sulphate of quinine	gr. j.
Extract of hemlock	gr. iij.–gr. v.
Dilute hydrobromic acid	♏iv.
Spirit of chloroform	♏x.
Water to	ʒj.

Mix.

One dose. To be repeated every four hours for chronic bronchitis in old people. The quinine acts as a germicide, and the purulent discharge is removed.

Mistura Tussi Rubra Concentrata

Acid. hydrobrom. dil. ʒv., spt. chloroformi ʒiij. ♏160, liq. morph. hydrochl. ʒj ♏320, acid. hydrocyan. dil. ♏160, tr. persionis ♏160, syrup. ad ʒxx. Dose: ʒj. —*A. Ph. F.*

The following recipes are from the *C. & D. Diary*, 1905 and formulas from later *Diaries* are given in the Supplementary Chapter:—

Cough-mixtures

P.F. 122

Syr. rhœados	lb. ij.
Acid. citric.	ʒiij.
Morphin. acetat.	gr. xvj.
Ess. amygd. amar. (1 in 48)	ʒij.
Chlorodyni	ʒij.

Dose night and morning: Adults, two teaspoonfuls; eight years, sixteen drops; four years, eight to ten drops.

P.F. 123

Syr. papav.	ʒxviij.
Oxymel. scillæ	ʒxviij.
Syr. rhœados	ʒxxxvj.
Aq. cinnamom.	ʒxij.
Aquæ	ʒxx.
Tr. camph.	ʒivss.
Vin. ipecac.	ʒij.

P.F. 124

Oxymel. scillæ	ʒLII.
Syr. scillæ	ʒxvj.
Oxymel.	ʒxvj.
Liq. morph. hydroch.	ʒviij.
Vin. antimon.	ʒviij.
Vin. ipecac.	ʒviij.

P.F. 125

Syr. papav.	ʒj.
Oxymel. scillæ	ʒj.
Vin. ipecac.	ʒj.

ʒj. pro dose.

P.F. 126

Ess. menth. pip.	ʒj.
Chlorodyni	ʒiij.
Vin. ipecac.	ʒvj.
Spt. æther. co.	ʒiij.
Syr. scillæ	ʒxv.
Ext. glycyrrhiz. liq.	ʒx.
Syr. tolut.	ʒxv.
Theriacæ	ʒxv.

P.F. 127

Vin. ipecac.	ʒiss.
Tr. camph. co. (sine opio)	ʒj. ʒvj.
Oxymel. scillæ	ʒiss.
Syr. tolutani	ʒij.
Inf. senegæ ad	ʒxLII.

P.F. 128

Liq. opii sedat.	ʒj.
Vin. ipecac.	ʒiss.
Syr. scillæ	ʒiv.
Aq. cassiæ ad	ʒxxx.

P.F. 129

Ammon. carb.	ʒj.
Spt. chloroformi	ʒiij.
Syrupi	ʒj.
Inf. senegæ ad	ʒviij.

A tablespoonful in water every four hours.

Adult Cough and Bronchitis Mixture

Syr. rhœados	ʒss.
Glycerini	ʒss.
Liq. morph. hydrochlor.	ʒj.
Vin. ipecac.	ʒiss.
Acid. sulphuric. dil.	ʒiss.
Aquam ad	ʒvj.

ʒss. ter in die.

Cough and Bronchitis Mixture

P.F. 8

Liq. chloroformi co. (Squire)	ʒv.
Tr. cannab. indicæ	ɱx.
Aceti	ʒss.
Aquam ad	Oss.

M.

Balsamic Cough-mixture

P.F. 9

Tr. chlorof. et morphinæ ('85)	ʒij.
Acid. nitric. dil.	ʒij.
Acet. ipecac.	ʒiv.
Inf. senegæ conc.	ʒiv.
Oxymel scillæ ad	℥iij.

M.

Dose: One teaspoonful for an adult.

Family Cough-mixture

P.F. 2

Succi solazzi	℥ij.
Aquæ	Oj.
Sacchari	lb. ij.
Ol. anisi	ʒss.

M.

Dose: Adults, two teaspoonfuls; children, half to one teaspoonful, according to age.

Pectoral-cough Mixture

Pulv. tragacanthæ	℈ij.
Tr. camph. co.	℥iij.
Tr. senegæ	℥ij.
Acid. sulphuric. dil.	ʒiss.
Syr. papaveris	℥iiss.
Syr. rhœados	℥iv.
Tr. tolutanæ	ʒij.
Syr. tolutani	ʒij.
Aquam ad	℥xxiv.

M.

Children's Cough-mixtures.—The simplest possible remedies should be used for children. In most cases a few drops of ipecacuanha-wine given on a piece of loaf sugar every two or three hours serves to make coughing easier. Put-up mixtures and syrups should be pleasant to the taste, nicely coloured, and perfectly clear. They must, in short, be such that the children will look forward to the next dose. Opium and similar narcotics should be rigidly excluded. The great efficacy of bromides in bronchial affections, and the tolerance of them which children exhibit, favour the administration ot these medicines. As a rule children under a year old should not get cough-mixtures; for them a single drop of ipecacuanha-wine in a little sweetened water suffices to give relief.

I. **Dr. Clark Burman's**

Liq. ammon. acet.	ʒiv.
Vin. ipecac.	ʒiss.
Spt. æther. nit.	ʒj.
Syrupi	℥j.
Aq. ad	℥iij.

M.

Dose: ʒj. every four hours for children under six years and ʒij. for those above.

II

Ammon. carb.	gr. xv.
Vin. ipecac.	ʒij.
Syr. scillæ	ʒiij.
Syr. limonis	℥j.
Tr. croci	ɱx.
Aq. ad	℥iij.

M.

Sig.: For children of one year

and upwards a teaspoonful to a dessertspoonful, according to age, thrice daily.

III. Dr. Hillier's

Ammon. carb.	. .	gr. xij.
Tr. scillæ	. . .	ɱxx.
Syrupi	. . .	ʒij.
Inf. senegæ ad	. .	℥ij.

M.

Dose: ʒj. to ʒij. every three hours.

IV

Tr. camph. co.	. .	ʒj.
Vin. ipecac.	. .	ʒj.
Vin. antimon.	. .	ʒj.
Spt. æther. nit.	. .	℥iss.
Oxymel. scillæ	. .	℥xx.
Aq. chloroform.	. .	℥x.
Aq. destillat. ad	. .	Oiv.

M.

Dose: ʒj. three or four times a day when the cough is troublesome.

An efficacious mixture, to be retailed in 2-oz. (1*s.* 1½*d.*), 4-oz. (2*s.* 3*d.*), and 6-oz. (2*s.* 9*d.*) bottles.

The following are formulas communicated to the *C. & D. Diary*, 1905. In the Supplementary Chapter later *Diary* formulas are given :—

P.F. 191

Liq. pruni virg. (Fletcher)		℥x.
Liq. limonis (Fletcher)	.	℥xv.
Liq. ipecac. (Fletcher)	.	ʒiiss.
Liq. rhœados (Fletcher)	.	℥ss.
Glycerini	. . .	Oij.
Syrup. ad	. . .	Cong. j.

M.

Dose: Half to one teaspoonful.

P.F. 192

Vin. ipecac.	. .	.	ʒx.
Tr. camph. co.	. .	.	ʒj.
Syr. althææ,			
Syr. rhœados	.	aa.	ʒiij.
Syr. scillæ	. .	.	℥xij.
Aquam ad	. .	.	℥xxv.

M.

Dose: From ½ to 2 dr.

P.F. 193

Oxymel. scillæ	. .	℥ss.
Tr. camph. co.	. .	ʒss.
Syr. tolut.	. .	ʒij.
Spt. æther. nit.	. .	℥ss.
Mucil. acaciæ (1–16)	.	℥viij.

M.

Dose: One teaspoonful when the cough is troublesome.

P.F. 194

Vin. ipecac.	. .	ʒiss.
Spt. æther. nit.	. .	℥j.
Liq. rosæ dulc.	. .	ʒj.
Oxymel. scillæ, syr. tolut. aa. pt. æq. ad	. .	℥xxxvj.

M.

P.F. 195

Syr. scillæ	. .	ʒiv.
Oxymel. scillæ	. .	ʒiiiss.
Vin. ipecac.	. .	ʒss.
Syr. rhœados	. .	ʒij.
Glycerini	. .	ʒij.
Acet. rub. idæi	. .	℥x.
Ess. anisi	. .	ʒj.

(*Chest and Lung Tonic*)

P.F. 196

Theriacæ	. .	lb. ij.
Ol. anisi	. .	ʒiij.
Tr. tolut.	. .	ʒiv.
Ext. ipecac. liq.	. .	ʒij.
Acet. scillæ	. .	℥viij.
Acid. acet. fort.	. .	ʒvj.
Aq. bullient. ad	. .	Oviss.

P.F. 197

Glycerini	℥vj.
Vin. ipecac.	℥j.
Oxymel. scillæ	℥vj.
Syr. rhœados	℥vj.
Acid. hydrobrom. dil.	℥vj.
Spt. chlorof.	℥j.
Ess. amygdal.	gtt. xx.
Tr. lobeliæ	℥x.
Tr. camph. co.	℥j.
Aquam ad	℥xl.

M.

Cap. ℥j. vel ℥ij. ter in die.

P.F. 198

Oxymel. scillæ	℥x.
Syr. scillæ	℥x.
Liq. ammon. acet. conc.	℥iv.
Tr. camph. co. sine opio	℥iij.
Vin. ipecac.	℥iv.
Ol. anethi	♏xx.
Glycerini	℥iv.
Acid. acetic.	℥iss.
Syrup. ad	℥lxxx.

M.

P.F. 199

Potass. bromid.	℈iv.
Vin. ipecac.	℥x.
Syr. scillæ	℥v.
Liq. ammon. acet. conc.	℥iss.
Ol. anisi	♏v.
Spt. camph.	℥j.
Syrup.	℥iij.
Liq. cocci	℥j.
Aq. chloroform. ad	℥xx.

M.

P.F. 200

Vin. ipecac.	♏cxcij.
Spt. ammon. co.	♏cxcij.
Tr. scillæ	℥ss.
Ext. glycyrrhiz. liq.	℥j. ℥iss. ♏x.
Aq. carui ad	℥viij.

M.

℥j. pro dose.

P.F. 201

Tincture of tolu	2 oz.
Extract of liquorice	2 oz.
Sol. ammonium acetate (1–5)	10 oz.
Syrup of black currant	10 oz.
Vinegar of squill	5 oz.
Ipecacuanha-wine	7½ oz.
Oil of aniseed	3 dr.
Honey	3 lbs.
Treacle	3 lbs.
Water to	1 gal.

Mix.

P.F. 202

Sodii bromidi	℥iv.
Vini ipecac.	℥j.
Spt. pruni virg.	℥j.
Syr. tolutan.	℥iij.
Syr. simplicis	℥iij.
Syr. rhœados	℥iij.
Aq. anisi	℥xvj.

M.

P.F. 203

Vin. ipecac.	℥ij.
Aq. camph., oxymel. scillæ, syr. tolut., glycerin, et aquæ aa.	℥iij.
Liq. amm. acet. conc.	℥j.
Liq. rosæ dulc.	℥j.

M.

P.F. 204

Tr. camphoræ co.	℥iss
Spt. æther. nit.	℥iss.
Liq. ammon. acet.	℥j.
Syr. scillæ	℥v.
Vin. ipecac.	♏xlv.
Vin. antimonialis	♏xlv.
Ext. glycyrrhiz. liq.	℥j.
Aquam ad	℥iv.

M.

Whooping-cough requires slightly different treatment from ordinary winter coughs, and the following recipes are of special value here. No. 1. is the prescription of the Victoria Hospital for Sick Children.

Whooping-cough Mixtures

I

Ammon. bromid.	gr. xxxij.
Tr. lobeliæ	♏xxxij.
Tr. belladonn.	♏xxxij.
Syr. tolutan.	ʒss.
Aq. chloroformi	ʒj.
Aq. ad	ʒij.

M.

Dose: ʒj. every four hours for children of one to five years.

II

Ammon. bromid.	ʒj.
Vin. ipecac.	ʒiij.
Tr. senegæ	ʒss.
Tr. card. co.	ʒiss.
Syr. tolutan.	ʒij.
Aq. ad	ʒiv.

M.

Dose: ʒss. to ʒj. thrice daily, and a double dose at bedtime.

III

Vin. ipecacuan.	ʒj.
Syr. tolutani	ʒj.
Syr. mori ad	ʒiv.

M.

Dose: A half to a whole teaspoonful three or four times a day.

IV

Codeinæ	gr. j.
Acid. phosphoric. dil.	ʒss.

Solve et adde

Acid. hydrocyan. dil.	♏viij.
Syr. tolutan.	ʒj.
Aq. ad	ʒiv.

M.

Dose: A teaspoonful every four hours.

P.F. 16

Ammon. bromid.	gr. xcvj.
Pulv. ipecac.	gr. xcvj.
Mucil. acaciæ	ʒiv.
Syr. tolut.	ʒiv.
Tr. camph. co.	ʒj.
Tr. scillæ	ʒj.
Aq. chloroformi ad	ʒxviij.

M.

P.F. 17

Liq. ext. of mouse-ear (*Gnaphlaium uliginosum*)	ʒiiss.
Syrup of Virginian prune	ʒv.
Ipecacuanha-wine	ʒiss.
Simple syrup	ʒxj.

Mix.

MUCILAGINES—MUCILAGES

Mucilago Althææ

Marshmallow-root (sliced)	ʒj.
Boiling water	Oj.

Infuse for a quarter of an hour, and strain with expression.

Mucilago Chondri

Irish moss	ʒvj.
Distilled water	a sufficiency

Wash the moss with cold water to clean it, then put it into 30 oz. of water, and heat for fifteen minutes,

constantly stirring. Strain through muslin, and wash the strainer with water to 30 oz.

Mucilago Amyli, B.P.C.

Rub starch ʒss. to a smooth paste with distilled water ʒxx., and heat the mixture to boiling.

Mucilago Cydonii, U.S.P. 1880

Quince-seed . . .	2 grams
Distilled water .	100 c.c.

Macerate the seed in the water for half an hour, agitating frequently, and drain through muslin without pressure.

Now in N.F. B.P.C. mucilage is double this strength.

Mucilago Dextrini, N.F.

Dextrin	ʒx.
Distilled water . .	ʒxx.

Mix, heat, stirring constantly, until the dextrin dissolves; add water to bring the weight to 30 oz., and strain through muslin.

Mucilago Lini, B.P.C.

Infuse linseed ʒj. in boiling distilled water ʒviij. for fifteen minutes and strain.

Mucilago Salep, Ph.G.

Powdered salep . .	ʒij.
Cold water . . .	ʒiiss.
Boiling water to . .	ʒxxv.

Mix the salep with the cold water thoroughly; then pour on the boiling water and agitate well to make a uniform mucilage.

Mucilago Sassafras, U.S.P. and B.P.C.

Sassafras-pith . . .	ʒj.
Distilled water . .	Oiiss.

Macerate for three hours and strain.

Mucilago Ulmi, U.S.P.

Slippery-elm bark (sliced)	ʒiij.
Boiling water . . .	Oiiss.

Macerate for one hour in a covered vessel and strain.

NEBULÆ—SPRAYS

The following are the strengths of certain oleaceous sprays:—

Carbolic acid gr. x., liquid paraffin to ʒj.

Chloroform and liquid paraffin, equal parts.

Cocaine gr. xxv., almond oil to ʒj.

Copaiba ʒj., ether ʒij., liquid paraffin ʒv.

Creosote ʒss., liquid paraffin to ʒj.

Ether and liquid paraffin, equal parts.

Eucalyptus oil ♏xx., liquid paraffin ʒj.

Menthol gr. v. to gr. x., liquid paraffin to ʒj.

Tar oil ʒss., liquid paraffin to ʒj.

Terebene ʒj., liquid paraffin to ʒj.

A.Ph.F. Nebulæ.

Asthmatica Co. — Cocain. hydrochl. gr. iiss., atropin. sulph. gr. j., sodii nitrit. gr. xv., glycerin. ʒij., aq. dest. ad ʒj.

Benzoin. et Cocain. et Menthol. — Menthol. ʒss., cocainæ hydrochlor. gr. v., tr. benz. co. ʒj., glycerinum ad ʒij.

Cocain. et Menthol. — Cocainæ (alk.) gr. x., menthol. ʒj., paraff. liq. ad ʒj.

Cocain. et Menthol. Co. — Cocainæ hydrochlor. gr. iij., menthol. gr. x., tr. aurant. ʒiij., glycerinum ad ʒj.

Eucalypti Co. — Ol. eucalypt. ♏xx., thymol gr. iij., menthol. gr. xxv., ol. gaultheriæ ♏vij., ac. boric. gr. vij., glyc. ac. tannic. ʒiij., alcohol. (90-per-cent.) ad ʒij.

Guaiacol. et Menthol.—Guaiacol. ♏x., menthol. ʒj., paraff. liq. ad ʒj. [B.P.C. gives 2, 4 and 94.]

Iodini et Menthol.—Iodi gr. j., menthol. ʒj., paraff. liq. ad ʒj. Dissolve the iodine in the oil by heat and add the menthol while warm.

Nebula Cocainæ Composita, B.F.
(*Nebula Eucalypti et Mentholis et Cocainæ, B.P.C.*)

Cocaine	gr. ij.
Menthol	gr. iv.
Eucalyptus oil	♏vj.
Camphor	gr. iv.
Spray oil	ʒj.

The B.P.C. quantities differ slightly, and liquid paraffin is used.

Nebula Iodi Composita, B.F.

Iodine	gr. j.
Carbolic acid	gr. iv.
Spray oil	ʒj.

Dissolve.

B.P.C. is 1 per cent. each of iodine and carbolic acid in liquid paraffin.

Nebula Iodi et Acidi Tannici

Tr. iodi ♏iij., glyc. ac. tannici ♏xij., aq. ad ʒj.

Nebula Iodi, Menthol. c. Alboleno

Iodi gr. j., potass. iodidi gr. ij., menthol. ʒj., alboleni ʒij.

Nebula Iodi et Mentholis, B.P.C., is iodine 2, menthol 4, and liquid paraffin to 100.

Nebula Mentholis Co., B.P.C.: Menthol 3, cocaine hydrochloride 0·5, simple tincture of benzoin 50, and glycerin to 100.

Nebula Mentholis et Cocainæ, B.P.C., is menthol 5, cocaine 2, almond oil 25, and liquid paraffin to 100.

Nebula Suprarenalin et Cocainæ, B.F.
(*Nebula Adreninæ c. Cocainâ, B.P.C.*)

Suprarenalin or adrenalin solution (1 in 1,000)	ʒiss.
Cocaine hydrochloride	gr. ix.
Distilled water	ʒj.

Mix.

Contains suprarenalin or adrenalin 1 in 5,000, cocaine hydrochloride 2 per cent.

Oleum pro Nebula, B.F.
(*Spray Oil*)

Purified white petroleum	ʒiv.
Balsam of Peru	♐ij.

Digest in a bottle on a water-bath for ten minutes, and filter when cold.

OLEATA—OLEATES

Oleates of the metals were suggested as medicinal agents by the late Mr. John Marshall, an eminent English surgeon. This was in 1872. He suggested that they should be made by dissolving the oxides in oleic acid. The oleate of mercury quickly obtained a secure footing in medicine. It was but a step to combine the alkaloids, such as aconitine and morphine, with oleic acid for topical application. In 1879 Dr. John V. Shoemaker, of Philadelphia, proposed to make the oleates by double decomposition of an impure alkaline oleate (Castile soap) and a metallic salt. He introduced a number of such oleates, one or two of which are in powder form, the rest unguents. Beringer advises the use of pure sodium oleate, made by saturating oleic acid with soda, and

this is the best plan of working, although it may be explained that most of the powdered oleates are mixtures containing much stearate. Latterly, stearates have been introduced. These are readily obtainable in powder form by double decomposition, and their therapeutic effects are the same as those of the oleates.

Oleic acid, it may be noted, is a monobasic fatty acid, $HC_{18}H_{33}O_2$, molecular weight 282. The commercial acid, known as 'red oil,' is suitable for pharmaceutical purposes if it have a specific gravity of 0·890 to 0·900. For the purposes of calculation it may be regarded as pure. Subjoined is a list of the medicinal metallic oleates with their formulas and molecular weights, and from these data anyone with chemical knowledge may prepare the respective oleates by double decomposition between sodium oleate and the salt named in parentheses, unless when otherwise stated.

Oleic acid	$HC_{18}H_{33}O_2$	M.W.	282
Aluminium oleate	$Al(C_{18}H_{33}O_2)_3$	M.W.	880 (acetate)
Bismuth oleate	$Bi(C_{18}H_{33}O_2)_3$	M.W.	1052
Cadmium oleate	$Cd(C_{18}H_{33}O_2)_2$	M.W.	674 (sulphate)
Copper oleate	$Cu(C_{18}H_{33}O_2)_2$	M.W.	625 (sulphate)
Ferric oleate	$Fe(C_{18}H_{33}O_2)_3$	M.W.	899 (chloride)
Ferrous oleate	$Fe(C_{18}H_{33}O_2)_2$	M.W.	618 (sulphate)
Lead oleate	$Pb(C_{18}H_{33}O_2)_2$	M.W.	769 (acetate)
Manganese oleate	$Mn(C_{18}H_{33}O_2)_2$	M.W.	617 (sulphate)
Mercuric oleate	$Hg(C_{18}H_{33}O_2)_2$	M.W.	762
Mercurous oleate	$Hg_2(C_{18}H_{33}O_2)_2$	M.W.	962 (nitrate)
Nickel oleate	$Ni(C_{18}H_{33}O_2)_2$	M.W.	621 (sulphate)
Silver oleate	$AgC_{18}H_{33}O_2$	M.W.	389 (nitrate)
Sodium oleate	$NaC_{18}H_{33}O_2$	M.W.	304
Tin (stannous) oleate	$Sn(C_{18}H_{33}O_2)_2$	M.W.	681 (chloride)
Zinc oleate	$Zn(C_{18}H_{33}O_2)_2$	M.W.	627 (sulphate)

Sodium-oleate Solution is prepared as follows:— Heat in a large dish oleic acid 1,217 gr. to a temperature of 140° to 150° F., and add slowly to it a solution of caustic soda 192 gr. in a mixture of rectified spirit 6 dr. and distilled water 2 oz., stirring all the time until the acid is neutralised. The neutrality point is determined by dissolving a trifle of the soap in rectified spirit: as soon as this strikes a pale pink colour with phenolphthalein stop the addition of the soda. Now

dissolve the soap in 35 oz. of warm water, filter, and wash the filter with warm water to make the filtrate measure 43 oz. when cold.

This solution of sodium oleate contains (approximately) one molecular proportion in grains of combined oleic acid in 10 oz., so that for the molecular proportion in grains of the salt of a dyad metal (*e.g.*, zinc sulphate 287 gr.) 20 oz. of the solution is required. Solution of Sodium Stearate is made similarly to the above with stearic acid ($HC_{18}H_{35}O_2$) 1,222 gr. and the same proportions of the other ingredients. This solution also contains in 10 oz. the molecular proportion in grains of stearic acid, and may be used for making stearates exactly in the same way as oleates. In preparing the metallic oleates, note particularly what is said in the paragraphs following.

Aconitine Oleate

(*Oleinatum Aconitinæ, B.P.C.*)

A solution of aconitine 2 gr. in oleic acid 98 gr., prepared by gently heating. [B.P.C. is 50 of the acid, and olive oil to 100.]

Aluminium Oleate

Sodium-oleate solution ʒxxx. and solution of aluminium acetate (10-per-cent., s.g. 1·058) ʒiij. ʒivss. diluted with a pint of water. Heat each solution to 120° F. and pour the acetate solution gradually into the sodium-oleate solution, stirring assiduously. Collect on a cotton filter, wash with warm water (120° F.), and press. Heat carefully on a water-bath to expel the water. When cold dissolve in petroleum ether, filter, recover the ether by distillation, and finally heat on a water-bath to expel the petroleum odour.

Atropine Oleate

Dissolve atropine 8 gr. in oleic acid 1 oz. by a gentle heat.

Oleinatum Atropinæ, B.P.C., is U.S.P., viz. : Atropine 2, alcohol 2, oleic acid 50, olive oil to 100 ; all by weight.

Bismuth Oleate

Dried and levigated bismuth oxide . .	1 troy oz.
Oleic acid .	3 troy oz. 295 gr

Mix in a large basin, add 30 oz. of water, and boil, stirring all the time and replacing the water. When a little of the soapy mixture dropped in cold water gives no separation of oleic acid, and resembles an ointment, the operation is complete. Then decant the water and work the mass with a bone spatula to free it from adhering water.

Cocaine Oleate

Dissolve cocaine 6 gr. in oleic acid 94 gr. by a gentle heat.

Oleinatum Cocainæ, B.P.C., is U.S.P., viz. : Cocaine 5, alcohol 5, oleic acid 50, olive oil to 100 ; all by weight.

Copper Oleate

Sodium-oleate solution 20 oz., copper sulphate 249 gr., dissolved in distilled water 20 oz. Heat the solutions to 140° F., and pour the copper solution slowly into the oleate solution, stirring

constantly. Heat until the copper oleate becomes quite soft, decant the water, wash the oleate with two or three lots of warm water, and dry on a water-bath.

Lead Oleate

Lead acetate 379 gr., water and sodium-oleate solution same as copper oleate, and proceed in the same way.

Morphine Oleate

Dissolve morphine 1 gr. in oleic acid 60 gr. (B.P.C. 2 per cent., with oleic acid 50 and olive oil to 100.)

Quinine Oleate, U.S.P. and B.P.C.

Quinine 25 gr., oleic acid 75 gr. Triturate, then heat gently until dissolved.

Strychnine Oleate

Strychnine 2 gr., oleic acid 98 gr. Prepare as the last.

Veratrine Oleate, U.S.P. and B.P.C.

Veratrine 2 grams, oleic acid 50 grams, olive oil to 100 grams. Also prepare in the same way.

Zinc Oleate

Sodium-oleate solution 20 oz., zinc sulphate 287 gr., dissolved in distilled water 20 oz. Warm the solutions to 105° F., pour the zinc solution gradually into the oleate solution, stirring constantly. Collect the precipitate on a moist filter. Wash thoroughly with distilled water, dry on bibulous paper at a temperature not exceeding 100° F. When quite dry and cold rub lightly in a mortar to a uniform powder.

NOTE. — Zinci oleatum, B.P. 1885, was a soft mixture of zinc oxide 1 part and oleic acid 9 parts.

The following are the amounts of bases combined with oleic acid in 100 parts of the respective normal or true oleates :—

Normal oleate of iron (ferric).	8·9	per cent. of anhydrous ferric oxide.
Normal oleate of copper .	12·7	per cent. of cupric oxide.
Normal oleate of zinc . .	12·9	per cent. of zinc oxide.
Normal oleate of bismuth .	22·2	per cent. of bismuth oxide.
Normal oleate of mercury .	28·4	per cent. of mercuric oxide.
Normal oleate of lead . .	29·0	per cent. of lead oxide.
Normal oleate of morphine .	50·3	per cent. of morphine.
Normal oleate of atropine .	50·6	per cent. of atropine.
Normal oleate of cocaine .	51·8	per cent. of cocaine.
Normal oleate of quinine .	53·46	per cent. of quinine.
Normal oleate of strychnine .	54·22	per cent. of strychnine.
Normal oleate of veratrine .	61·15	per cent. of veratrine.
Normal oleate of aconitine .	69·6	per cent. of aconitine.

The formulas for oleates of alkaloids on these pages provide solutions of the respective oleates in a large excess of oleic acid. For much useful information by Mr. W. A. H. Naylor on the preparation of oleates, see *The Chemist and Druggist*, 1900, II., 524.

Olea Infusa or Infused Oils are favourite domestic medicines on the Continent. They are made from dried

narcotic herbs, such as absinth, belladonna, hemlock, and henbane, in the following manner. Four parts of the cut herb is macerated for several hours in 3 parts (by weight) of rectified spirit, then 40 parts (by weight) of olive oil is added and the mixture is heated on a water-bath, with constant stirring, until the spirit is dissipated. The oil is then filtered, the herb being pressed and the pressings also filtered. The 'National Formulary' orders the oils to be made with lard oil and cotton-seed oil, and adds a small percentage of ammonia solution ($\frac{1}{50}$ to 1 of herb), which helps to liberate the alkaloids and so make the oils more potent.

Oleum Anchusæ

(*Red Oil*)

Alkanet-root (bruised)	℥j.
Olive oil	℥xx.

Macerate for fourteen days, agitating occasionally, and filter.

NOTE.—Nut, rape, and other oils are used in place of olive oil, according to the purpose for which the red oil is required. In the United States the old oleum hyperici, P.L. (oil of St. John's wort), is called 'red oil.' This oil is made by macerating 4 oz. of the fresh flowers ('freed from the cups') in 32 oz. of olive oil until the oil is sufficiently coloured.

Oil of Bricks

(syn. *Ol. Lateritium, Ol. Benedictum, Ol. Divinum, Ol. Philosophorum, Ol. Sanctum*, &c.)

The old way of making this was as follows:—Make bricks red hot, and quench them in olive oil till they have soaked up all the oil. Then break the bricks in little pieces small enough to be put into a retort, and distil with a sand-heat gradually raised. Separate the oil from the watery portion of the distillate.

Nowadays a mixture of linseed oil and oil of turpentine tinted with tar or with alkanet is given for oil of bricks.

Oleum Benzoatum

Finest benzoin, in coarse powder	℥iv.
Methylated ether	℥viij.
Castor oil	℥ij.

Macerate the benzoin in the ether for a day, shaking frequently. Filter into an evaporating basin, add the oil, and allow the ether to evaporate spontaneously (or recover by distillation, if made in large quantities).

In the proportion of 30 gr. to the ounce this unctuous preparation is admirably suited for benzoating ointments.

Oleum Britannicum

(syn. *British Oils; Oil of Petre; Oil of Stone*)

There are many formulas for this preparation. Originally oil of petre (*Petræ oleum*) was natural rock oil or petroleum, and some formulas aimed to imitate the appearance and qualities of the red or brown natural oil in days when it was both scarce and dear. British oils seemed to approach it, and gradually the two things have come to be synonymous. We quote two formulas which are actually in use,

those in 'Gray' and other old authorities being wholly contradictory.

I

Oil of turpentine . .	℥xl.
Barbadoes tar . . .	℥xvj.
Oil of rosemary . .	℥j.
Oil of origanum . .	℥j.

II

Rape oil (coloured with alkanet) . . .	Oj.
Oil of turpentine . .	℥ij.
Spirit of tar . . .	℥ij.

Oleum Carbolicum

Usually made with olive oil, which gives a more antiseptic preparation than heavy petroleum oils. The common strength is 1 in 20, which is N.F., but 1 in 40 oil is also prescribed. The crystallised acid should be used. It may be fused by heat, and added to the oil, then shaken till solution is effected, or the crystals may be triturated in a mortar with a little of the oil, and the rest of the oil gradually added.

Ol. Cornu Cervi

(syn. *Ol. Animalis; Bone Oil; Dippel's Oil; Oil of Hartshorn; Oil of Man*)

An exceedingly complex oil obtained by the destructive distillation of bones, consisting chiefly of nitriles and pyrrols. Formerly used in medicine, as an antispasmodic, in doses of 10 to 30 drops, and it is still occasionally wanted, but is more used in industrial chemistry. Is said to be *Cotton's Drops* for chorea; dose 1 drop thrice daily, increased gradually to 20 drops, then decreased to 1 drop. (*C. & D.*, 1911, II., 225).

Devonshire Oils

Spt. camphoræ . .	℥ss.
Saponis mollis . .	℥iv.
Ol. terebinthinæ . .	℥ij.
Tr. opii	℥ss.
Bol. armenian. . .	℥iss.
Liq. ammon. fort. . .	℥j.
Aq. bullientis . . .	℥xx.

Driffield Oils

A preparation similar to this is made by mixing together in a 4-lb. jar 15 oz. of linseed oil and 5 oz. of spirit of turpentine. Add, with constant stirring, 10 dr. of strong sulphuric acid, and after a few hours a pint of water. Allow to stand all night, decant the oil, and add an ounce of spirit of tar to it. Take care that the oil does not froth over the jar when adding the vitriol.

Oil of Earthworms

Formerly made by boiling 1 part of earthworms in 1 part of sherry and 4 parts of olive oil until the wine was evaporated, then straining and pressing. Rape or olive oil, slightly coloured with tar, now meets the demand.

Oil of Exeter

Oil of wormwood . .	℥ss.
Oil of rosemary . .	℥ss.
Oil of origanum . .	℥ss.
Green oil . . .	℥x.
Rape oil . . .	℥xxx.

Mix.

NOTE.—The P.L. 1720 prescribed twenty-seven ingredients, euphorbium being one of them. Green oil is now commonly given for it.

Oleum Formicarum

Rub together 2 oz. each of fresh ants and dried sodium sulphate, and digest for twelve hours in 12 oz. of olive oil at 180° F. Press and filter.

Oleum Hyoscyami Compositum, N.F.

(syn. *Balsamum Tranquillans*)

Oil of absinth . . .	2 drops
Oil of lavender . .	2 drops
Oil of rosemary . .	2 drops
Oil of sage . . .	2 drops
Oil of thyme . . .	2 drops
Infused oil of hyoscyamus	3 oz.

Mix.

Oleum Iodatum

Iodine	gr. xv.
Olive oil	ʒij.

Triturate the iodine with a little of the oil in a mortar, and add the rest gradually. Heat until solution is effected.

The iodine may be increased up to ʒj. to ʒij.

Iodised oil is also made by digesting the iodine in liquid paraffin. The resulting preparation imparts little stain to the skin.

Oleum Iodi

According to MacAlister's patent, No. 13,865, 1886, olive oil or castor oil is treated with 20 per cent. of its weight of sulphuric acid, and after twelve or twenty-four hours washed with brine (20° Twad.). The oil after separation is rendered slightly alkaline with ammonia or other alkali, and shaken with an alcoholic solution of iodine.

The following formula provides a similar preparation :—

Soft soap	ʒj.
Glycerine	ʒij.
Ammonium iodide	ʒj.
Proof spirit to	ʒij.

Dissolve the iodide in ½ oz. of the spirit and the glycerine, with this mix the soap, add sufficient spirit to make 2 oz. of solution, and filter.

Ol. Jecoris Aselli aromat., D.A.V.

Saccharin	0·5 gram
Vanillin	0·1 gram
Oil of cinnamon	0·4 gram
Absolute alcohol	19 grams
Cod-liver oil	980 grams

Ol. Jecoris Aselli ferratum conc., D.A.V.

Ferric-chloride solution (10-per-cent.)	20 grams
Water	500 grams

Dissolve and add to a solution of

Powdered hard soap	34 grams
Warm water	1,000 grams

Collect the precipitate, wash with water, press, and dry on a water-bath. Then add

Olive oil	30 grams

Digest and make up to 200 grams with cod-liver oil.

Ol. Jecoris Aselli ferratum, D.A.V.

Ol. jecor. asel. fer. conc.	20 grams
Ol. jecoris aselli	80 grams

Ol Jecoris Aselli ferrojodatum, D.A.V.

Iodine	1·64 gram

Rub to a fine powder in a mortar, add gradually 50 grams of almond oil, and rub until dissolved; then add

Powdered iron	1 gram
Cod-liver oil to	1,000 grams

Shake thoroughly until combination is complete, and filter.

Ol. Jecoris Aselli jodatum, D.A.V.

Dissolve 1 gram of finely powdered iodine in 1,000 grams of cod-liver oil by warming and shaking.

Oil of Kermes

In Worcestershire syrupus rhœados is given for oil of kermes.

Oleated Methyl Salicylate

(syn. *Green Methyl Salicylate*)

(Wilbert)

Ground hempseed	10
Alcohol	5
Methyl salicylate to make	100

To the ground hempseed contained in a suitable bottle add the alcohol, and allow to stand for ten or twelve hours, then add the methyl salicylate, shake well, and allow to stand, with occasional mixing, for from four to five hours; filter, and add to the dark-green filtrate enough of the methyl salicylate to make 100 parts.

Well adapted as a local application in neuralgia, rheumatism, sprains, stiffness of the muscles and joints, and also as a substitute for sodium salicylate when the latter is not well borne by the stomach.

Oil of Mucilages

Fresh marshmallow-root	ʒvj.
Linseed	ʒiij.
Fenugreek-seed	ʒiij.
Water	ʒxxxij.
Olive oil	Oiij. ʒiv.

Bruise the root and seeds, boil in the water for half an hour, add the oil, and continue to boil until the water evaporates. Allow the solids to settle, and decant the clear oil.

Ol. Morrhuæ c. Ferri Iodido

Reduced iron	ʒss.
Iodine	ʒj.
Ether	ʒss.
Cod-liver oil to	ʒxxxij.

Rub the iodine, iron, ether, and 1 oz. of the oil together until black, then add the rest of the oil, and after six hours filter.

Neatsfoot Oil

(Factitious)

Lard oil	lb. iij.
Colza oil	Cong. ij.

Mix.

NOTE.—Genuine neatsfoot or trotter oil is made from the feet of oxen freed from blood and sinews. The feet are boiled in water for several hours, which furnishes a second quality of oil (obtained by skimming). A second boiling with fresh water furnishes the best oil.

Oleum Nervinum

'Nerve oil' is a name applied to neatsfoot oil, and also to the following preparation:—

Ol. carui	ʒj.
Ol. rosmarini	ʒij.
Ol. origani	ʒij.
Ol. anthemid. infus. ad	ʒvj.

M.

Newmarket Oils

Ol. lini	Oj.
Ol. terebinth.	Oj.
Ol. rubri	Oj.
Acid. sulphuric.	ʒj.

Mix the oils, and add the sulphuric acid gradually, stirring all the time. In a few days decant the clear oil.

Nine Oils

Whale or other fish oil	Cong. j.
Oil of turpentine	Oij.
Oil of amber	ʒv.
Red oil	ʒv.
Oil of spike	ʒij.
Oil of origanum	ʒij.
Barbadoes tar	ʒxl.
Camphorated oil	ʒx.
Sulphuric acid	ʒij.

Mix in the same way as Newmarket oils.

Oleum Phosphoratum

The B.P. preparation is made by heating almond oil to 300° F. for fifteen minutes, cooling, and filtering. In 99 parts of this 1 part of dry phosphorus is dissolved at 180° F. in a bottle. A 1-in-1,000 oil is in some Continental Pharmacopœias.

Phosphorus oil for non-medicinal purposes may be made in the same manner with cheaper fixed oil.

Oleum Picis Nigrum

(syn. *Black Oils*)

Oil of turpentine	ʒxx.
Linseed oil	ʒlx.
Sulphuric acid	ʒij.

Mix the oils, add the acid gradually, stirring well, then

Barbadoes tar	3 oz.

Mix well, set aside for ten days, then decant the clear portion.

Oil of Rhodium

(syn. *Oil of Duty*)

True oil of rhodium is distilled from the roots of *Convolvulus*

Scoparius and other species, and is obtainable; but factitious oils are usually sold under the name, the oil being used as a bait or 'entice.' Frequently a mixture of sandalwood oil and otto of rose or oil of rose-geranium is sold for oil of rhodium. The following is also a common formula:—

Copaiba balsam	ʒj.
Almond oil	ʒj.
Otto of rose	mxx.

Ol. Ricini Aromaticum, C.F.

(syn. *Sweet Castor Oil*)

Gluside (saccharin)	gr. viiss.
Chloroform	m 150
Oil of pimento	m 75
Oil of cassia	m 75
Oil of cloves	m 75
Castor oil to	ʒxl.

Dissolve the gluside in the chloroform, add the mixed oils, and shake.

B.P.C. is amyl acetate 0·1, gluside 0·23, alcohol 5, castor oil to 100.

Rubbing Oil

Ol. sinapis	ʒx.
Liq. ammon. fort.	ʒiiss.
Lin. saponis	ʒviiss.

Oleum Sambuci

(syn. *Ol. Viride; Green Oils*)

Fresh elder-leaves	ʒxvj.
Olive oil	ʒxxxij.

Boil gently until the leaves are crisp, and press out the oil.

May also be made by adding 1 dr. of chlorophyll to 25 oz. of warm olive oil, shaking till dissolved, and setting aside for a week to clear.

NOTE.—The old green oils was made by boiling 3 oz. each of laurel, rue, thyme, wormwood, and wild chamomile leaves in the same volume of olive oil as above until crisp, allowing to settle, and decanting the clear oil.

Oil of Spike

Oil of spike lavender is well known, but is not what is meant when 'oil of spike' is asked for in many parts of the country. The following are a few of the formulas in use:—

I

Ol. succini rect.	ʒj.
Ol. terebinthinæ	Oj.
Rad. anchusæ	q.s. ad color.

Macerate for three days, and strain.

II

Rad. anchusæ.	ʒij.
Petrol. barbadensis	ʒj.
Ol. terebinthinæ	lb. ij.

Macerate for three days, and strain.

III

Ol. lini	lb. j.
Ol. terebinth.	lb. j.
Petrol. barbad.	ʒij.
Ol. succini	ʒj.

M.

IV

Ol. lavandulæ	ʒj.
Ol. olivæ	ʒij.
Ol. terebinthinæ	ʒij.

M.

The first three preparations are for veterinary purposes, the fourth 'to rub the chest; for a cold.'

Earl of Stamford's Oils

Camphor.	ʒiij.
Ol. origani	ʒvj.
Ol. terebinth.	ʒxx.
Spt. rectificat.	ʒxviij
Ol. viridis	ʒlxxij.

M.

Oil of Swallows

The original P.L. oil was made from swallows, chamomile, rue, greater and lesser plantain, bay-leaves, pennyroyal, St. John's wort, dill, hyssop, rosemary, sage, wine,

and oil. Oleum sambuci is now given for it.

Oil of Tartar

Salt of tartar allowed to deliquesce to a syrupy liquid.

Three Oils

Oil of lavender . .	℥j.
Oil of turpentine . .	℥j.
Red oil	℥j.

Mix.

Oxymel Camphoræ

Camphor . . .	℥ss.
Rectified spirit . .	℥j.
Distilled water . .	Oiv.

Mix, filter, and add

Glacial acetic acid . .	℥j.
Honey	lb. ij.

Boil and skim.

Digestive Ovals

Pepsin, B.P. . . .	1 gr.
Heavy carbonate of magnesium . . .	2 gr.
Powdered capsicum .	½ gr.
Fluid extract of golden seal	1 min.
Powdered rhubarb. . .	¼ gr.
Powdered ipecac. . . .	1/24 gr.

Mix.

Rheumatic Paint

Mentholis . . .	℥j.
Chloroformi . . .	℥j.
Lin. aconiti . . .	℥j.
Lin. camphoræ . .	℥ij.

M.

Ringworm-paint

P.F. 3

Aqueous solution of ferrous sulphate 1 in 5.

Bidet's Liquid Vesicant

Equal parts of tincture of cantharides (1 in 10), tincture of rosemary, and chloroform are given by François, but Bouchardat and Dujardin-Beaumetz both give cantharides 1,000 grams, wax 5 grams, and chloroform to produce 1,000 grams of *Vésicatoire liquide*.

PASTÆ—PASTES

Pasta Arsenicalis

1. Dr. McIntosh's Formula

Acidi arseniosi . .	ʒiv.
Cocainæ hydrochloridi .	ʒiv.
Menthol. . . .	ʒj.
Glycerini . . .	q.s.

Reduce the solids to fine powder and mix, then make into a stiff paste with the glycerine.

II

Acidi arseniosi . .	ʒij.
Morphinæ acetatis . .	℈j.
Ol. caryophylli . .	ʒss.
Creosoti . . .	q.s.

Mix the powders, add the oil and sufficient creosote to make a stiff mass.

NOTE.—These are used for devitalising the pulp of teeth. There are many other formulas, but the two given are sufficiently representative. Liquefied carbolic acid may be used instead of creosote.

Brook's Paste

Conf. sennæ . . .	ʒix.
Potass. tart. acid. . .	ʒj.
Sulph. sub. . . .	ʒj.
Mellis	ʒj.
Ol. amygdal. . . .	ʒij.
Pulv. pip. nig. . .	ʒss.
Pulv. glycyrrhiz. . .	ʒss.
Pulv. fœniculi . . .	ʒj.
Pulv. sacch. alb. . .	ʒj.

M.S.A.

Pasta Amyli Iodidi
(Tilbury Fox)

Powdered starch	ʒj.
Glycerine	ʒij.
Water	ʒvj.

Rub down the starch with the water, add the glycerine, and boil; when nearly cold add

Solution of iodine (B.P.'85)	ʒj.

Mix well.

Pasta Calcii Chloridi c. Pice
(Unna)

Zinc oxide	ʒss.
Kaolin	ʒj.
Calcium chloride	ʒij.
Huile de Cade	ʒij.
Distilled water	ʒiiss.
Yellow vaseline	ʒij. ʒvj.

Mix the powders with the water, and incorporate the huile de Cade and vaseline, previously mixed. This mixture should be creamy when added to the powders and water.

Pasta Carbolica
(Lister)

Prepared chalk made into a paste with carbolic oil (1 in 10 of olive oil).

Pastæ Causticæ

I. Canquoin's

Equal parts of zinc chloride and flour. Dissolve the chloride in just sufficient water, then add the flour and water to make a thick paste.

In English practice glycerine is preferred to water in the last stage of the process.

Pastes are also made with 2, 3, 4, and 5 parts of flour to 1 part of zinc chloride.

II. London Paste

Caustic soda and slaked lime, equal parts, reduced to powder, mixed, and kept in a stoppered bottle until required, when about a third of its weight of water is added to make a thin paste.

III. Vienna Paste

Equal parts of caustic potash and quicklime, powdered and kept in a bottle.

NOTE.—This is *Potassa cum Calce*, U.S.P., and *Pasta Potassæ et Calcis*, B.P.C., with alcohol q.s. to make a paste. Continental Pharmacopœias give varying strengths up to 3 parts of potash to 1 part of lime. When required for use the powder is made into a paste with rectified spirit. Martindale orders slaked lime in the French Codex proportions—viz., 5 of potash and 6 of lime—but it is quicklime that the Codex and Continental authorities prescribe. *Filhos's Caustic* is a mixture of caustic potash 5 parts and quicklime 1 part, made by fusion.

Pasta Copaibæ

Copaiba	ʒj.
Powdered cubebs	ʒiij.
Extract of henbane	ʒj.
Powdered camphor	ʒj.
Treacle	a sufficiency

Mix the camphor and the extract with the cubebs, add the copaiba, mix, and make into a stiff paste with the treacle.

Dose: ʒss. to ʒj.

Pasta Cubebæ

Take any quantity of light carbonate of magnesium and make it into a thin paste with copaiba, then add sufficient powdered cubebs to make it into a stiff paste.

Dose: ʒss. to ʒj.

Pasta Ichthyol.
(Unna)

Ammonium ichthyolate	℈ij. to ʒij.
Powdered dextrin	ʒj.
Distilled water	ʒj.
Glycerine	ʒvj.

Dissolve the ichthyol in the water and the glycerine, mix with the dextrin, and heat on a water-bath until uniform.

Pasta Iodi et Amyli, C.F. and B.P.C.

Starch, in powder	℥j.
Glycerine	℥ij.
Water	℥vj.
Diluted solution of iodine	℥j.

Boil the starch in the glycerine and water; when nearly cold add the iodine solution and mix.

Pasta Methyl. Salicylat. Co., B.P.C.

Melt stearic acid 10 on a water-bath, add sodium carbonate 1·2 dissolved in glycerine 1·2, and hot water 4; when clear, make up to 40 with warm water. Dissolve menthol 4 in methyl salicylate 50 (by weight), add the above mixture, shake to a cream, and put up in collapsible tubes.

Pasta Naphthol.
(Lassar)

Beta-naphthol	℥j.
Precipitated sulphur	℥v.
Yellow vaseline	℥ij.
Soft soap	℥ij.

Mix thoroughly.

Pasta Plumbi
(Unna)

Litharge	℥vj.
Vinegar	℥ij. ℥ij.

Boil together until the solution is syrupy, then add

Starch	℥v.
Water	℥ij.

Again boil, and add

Glycerine	℥ij.

Mix, and heat if necessary until the paste weighs 5 oz.

Pasta Resorcin.
(Lassar)

	Fortior	Mitior
Resorcin	℥ij.	℥j.
Zinc oxide	℥ij.	℥iiss.
Starch	℥ij.	℥iiss.
Vaseline oil	℥iv.	℥iv.

Rub all the powders together until they are impalpable, then make into a paste with the oil.

Pasta Resorcini, B.P.C., is the strong, and *Pasta Resorcini Mitis* the mild paste.

Ihle's Paste

Amyli	℥ij.
Zinc. oxid.	℥ij.
Lanolin.	℥j.
Vaselin.	℥iij.

Medicated with various substances, such as resorcin.

Pasta Zinci

I. Unna's Stiff

Zinc oxide	℥iiss.
Kaolin	℥ss.
Benzoated lard	℥vij.

II. Unna's Soft

Prepared chalk	℥j.
Zinc oxide	℥j.
Linseed oil	℥j.
Lime-water	℥j.

III. Lassar

Zinc oxide	℥iij.
Starch	℥iij.
Salicylic acid	℥ij.
Soft paraffin	℥vj.

Levigate the powders together, and make into a paste with the soft paraffin.

No. III. is the paste which is meant when Lassar's paste is ordered.

Pasta Zinci et Gelatini (*syn.* Unna's Paste), B.P.C., is gelatin 15, water 35, zinc oxide 15, glycerine 35. (*See* p. 630.) *Pasta Zinci Composita*, B.P.C., is No. III. above.

Pasta Zinci Chloridi c. Opio

Extract of opium	℈j.
Canquoin's paste (p. 734).	℥j.

Rub down the extract with a little water, and mix with the paste (which should be the kind made with glycerine).

Pasta Zinci Sulphurata
(Unna)

Zinc oxide	℥iss.
Precipitated sulphur	℥j.
Kaolin	℥ss.
Benzoated lard	℥vij.

Levigate the powders together, and mix with the lard.

Pastilli Heroin, B.F.

(*Pastillus Acetomorphinæ Co., B.P.C.*)

Heroin hydrochloride	gr. j.
Ammoniated glycyrrhizin	gr. x.
Pumilio pine oil	♏viij.

Glyco-gelatin, sufficient to make 32 pastilles.

P. Acetomorph. et Pini Co., B.P.C.—Acetmorph. mur. gr. $\frac{1}{48}$, ol. pini ♏ss., terpin. hydrat. gr. $\frac{1}{8}$ in each.

P. Acetom. et Terpin., B.P.C.—Acetomorph. mur. gr. $\frac{1}{40}$, terpin. hydrat. gr. ss. in each.

P. Acetom. et Terpin. et Menthol., B.P.C.—Acetom. mur. gr. $\frac{1}{400}$, terpin. hydrat. gr. $\frac{1}{4}$ menthol. gr. $\frac{1}{40}$ in each.

Sulphur Pellets

(syn. *Blood Pellets; Blood-purifying Pellets or Tablets*)

Sulphur. præcip.	gr. v.
Potass. tart. acid.	gr. j.
Gum. acaciæ	q.s.

Make a tablet.

Pepsinum Aromaticum, N.F.

Saccharated pep.	ʒxxiv.
Aromatic fluid extract	ʒiss.
Tartaric acid	gr. xxv.
Sodium chloride	gr. xxv.

Mix by trituration, dry in warm air, and preserve in a stoppered bottle.

Pepsinum Saccharatum, N.F.

A mixture of U.S.P. pepsin 1 part and powdered sugar of milk 9 parts. (Formerly U.S.P.)

Pessi or Pessaries

The basis for these is cocoa-butter or gelatin mass, preferably the former. They are made 60 gr. and 120 gr. in weight, the former being the modern size. A suitable gelatin basis (gelato-glycerine, *see also* p. 628) for pessaries and suppositories is

Finest gelatin	ʒj.
Distilled water	ʒj.
Glycerine	ʒiiiss.

Soak the gelatin in the water, and when soft add the glycerine and dissolve by the heat of a water-bath.

The amounts of medicaments for each are as below. Those marked * are B.P.C., with the B.P. glycerine suppository mass. Those marked † should only be prepared with cocoa-butter or other fat basis :—

Aconitine	$\frac{1}{360}$ gr.
*Alum	15 gr.
†Alum and catechu	15 gr. of each
*Alum and zinc sulphate each	5 gr.
Atropine	$\frac{1}{20}$ gr.
Atropine sulphate and morphine acetate	$\frac{1}{20}$ and $\frac{1}{2}$ gr.
Belladonna leaf ext.	3 gr.
Belladonna root ext.	$\frac{1}{2}$ to *2 gr.
Bismuth oxide	10 gr.
Bismuth subnitrate	15 gr.
*Boric acid	10 gr.
*Carbolic acid	2 gr.
Chloral hydrate	10 gr.
Cocaine	*$\frac{1}{2}$ to 1 gr.
*Coniine	$\frac{1}{2}$ min.
Conium extract	5 gr.
Eucalyptus oil	ʒss.
†Ferric chloride	5 gr.
Ferrous sulphate, dried	10 gr.
†Gallic acid	10 gr.
*Hydrastis fluid extract	12 min.
†*Ichthamol(ichthyol)	10 gr.
Iodoform	*5 to 10 gr.
Lead acetate	$7\frac{1}{2}$ gr.
Lead acetate and opium	5 and 2 gr.
*Lead iodide	5 gr.
Lead iodide and atropine sulphate	10 and $\frac{1}{20}$ gr.
Mercurial ointment	10 to *30 gr.
Mercuric oxide	2 gr.
Morphine mur.	$\frac{1}{2}$ gr.
Opium	2 gr.
Potassium bromide	10 gr.
Potassium iodide	10 gr.
Quinine hydrochlor.	*3 to 5 gr.
Silver nitrate	1 gr.
Sodium carbonate	15 gr.
†*Tannic acid	10 gr.
Zinc oxide	10 to *15 gr.
Zinc sulphate	10 gr.
Zinc sulphocarbolate	10 gr.

PILULÆ – PILLS

Abernethy's Pills
(*Pil. Colocynth. et Hydrarg., B.P.C.*)

Pil. hydrargyri . .	gr. iij.
Ext. coloc. comp. . .	gr. ij.

Fiat pilula.

NOTE.—A 5-gr. pill, consisting of pil col. co. 2 parts and pil. hydrarg. 1 part, is also given.

Pil. Coloc. et Hydrarg. Co., B.P.C., is pil. col. co. gr. ss., pil. hydrarg. gr. ¼, ext. hyoscyam. gr. ¼.

Aitken's Tonic Pill
(*Pil. Quinin. Sulph. Co., B.P.C.*)

Acid. arseniosi . .	gr. j.
Strychninæ . . .	gr. j.
Ferri redacti . .	gr. xxxiij.
Quininæ sulphat. . .	gr. L.
Extract. gentianæ . .	q.s.

Fiat massa et divide in pil. L.

This is N.F. The B.P.C. is half the above strength.

Pil. Aloes Dilutæ
(Dr. Marshall Hall's and B.P.C.)

Ext. aloes bbds. . .	ʒj.
Saponis hispan. . .	ʒj.
Theriacæ . . .	ʒj.
Ext. glycyrrhiz. . .	ʒj.

To make twenty-four pills.

Dose: One at bedtime.

B.P.C., in common with Gray and Squire, prescribes the same quantity of Barbados aloes, extracting it with water, so that the pill is about half the aloes strength of above.

Pil. Aloes et Mastiche
(syn. *Lady Hesketh's Pills; Lady Webster's Pills; Crespigny's Pills; Dinner Pills*)

Pulv. aloes . . .	ʒvj.
Pulv. mastiches . .	ʒij.
Pulv. rosæ rubræ . .	ʒij.
Syrupi	q.s.

Fiat massa et divide in pilulas clxxx.

B.P.C. uses conf. rosæ instead of rose-leaves and syrup.

Pil. Aloes et Podoph. Co., N.F.
(Janeway's)

Aloes (U.S.P. purified) .	gr. j.
Res. podophylli . .	gr. ss.
Ext. bellad. fol., U.S.P. .	gr. ¼
Ext. nucis vom. . .	gr. ¼
[Glycer. tragacanth. .	q.s.

ut fiat pilula]

Pil. Aloini Co., N.F.
(syn. *Anti-constipation Pills*)

Aloin.	gr. ½
Res. podophyll. . .	gr. ⅛
Ext. bellad. fol., U.S.P. .	gr. ¼
[Glycer. tragacanth. .	q.s.

ut fiat pilula]

Pil. Aloin. Co., B.P.C., is Sir Andrew Clark's pill, p. 739, with ferri sulph. in place of ferri sulph. exsic.

Pil. Aloini, Strychninæ et Belladonnæ, N.F.

Aloin.	gr. ⅕
Strychninæ . . .	gr. 1/120
Ext. belladon. fol., U.S.P.	gr. ⅛
[Glycer. tragacanth. .	q.s.

ut fiat pilula]

Also made with double the quantity of strychnine.

Pil. Aloin, Strych. et Bell. Co. is the same, with ext. rhamni pursh. gr. ss. as excipient.

Anæmia Pills

Ext. cascaræ sagradæ .	gr. ¼
Pil. ferri ad . . .	gr. ij.

Anderson's Scots Pills

The original pills are well represented by pil. aloes et myrrhæ, B.P., which (saving excipient) contains the same ingredients as those mentioned in a copy of the original document deposited in the Rolls House. American and Continental formulas more resemble that for pil. cambogiæ co., B.P., but anise is used as the flavouring, *e.g.* :—

Pulv. aloes bbds.	℥j.
Pulv. cambogiæ	ʒj.
Pulv. saponis	ʒij.
Pulv. glycyrrhiz.	ʒij.
Ol. anisi	♏xx.
Syrupi	q.s.

ut fiat massa

Divide into 3-gr. pills.

The American formula contains only a scruple of gamboge and the same of colocynth to the ounce of aloes.

Antibilious Pills

'Big'

Compound extract of colocynth	ʒj.
Extract of henbane	℈j.
Blue pill	gr. xv.
Powdered ipecacuanha	gr. v.
Powdered scammony	℈j.
Oil of cajuput	♏iv.

Mix well, and divide into twenty-four pills.

Dose: Two pills at bedtime.

'Little'

Podophyllin.	gr. viij.
Aloin.	gr. vj.
Jalapin.	gr. vj.
Capsicin.	gr. iij.
Pulv. ipecac.	gr. iij.
Ext. hyoscy.	gr. iij.
Ext. nuc. vom.	gr. iiss.
Glycer. tragacanth.	q.s.

Divide in pilulas LX.

Dose: One or two at dinner-time or bedtime.

Pil. Aloin. et Podoph. Co., B.P.C., resembles this, but contains no ipecacuanha.

P.F. 174

Pil. hydrarg.	2 grams
Pil. coloc. co.	3 grams

Dose: Five to ten grains.

P.F. 175

Pulv. jalapæ, pulv. cambogiæ, pulv. aloes barb., pulv. zingib., pil. hydrarg. aa. ʒj. Div. in pil. gr. iv.

P.F. 176

Pil. colocynth. co.	gr. ij.
Pil. hydrargyri,	
Ext. hyoscyami	aa. gr. iss.

Fiat pilula.

Antibilious and Liver Pills

P.F. 4

Pulv. res. podophylli	gr. ¼
Pulv. asafetidæ	gr. ¼
Pulv. capsici	gr. ⅛
Pulv. ext. coloc. co.	gr. ij.
Ol. carui	gr. ⅛
Ext. hyoscyami	gr. j.

Fiat pilula.

Anti-fat Pills

Ext. fuci vesiculosi	gr. iv.
Pulv. althææ	q.s.

ut fiat pilula

Dose: One or more pills with meals thrice daily.

Pilulæ Antistypticæ

(Dr. Macario's)

Ext. aloes socot.	℈j.
Ferri sulphat. gran.	℈ij.
Atropinæ sulphat.	gr. ⅛
Glycer. tragacanth.	q.s.

ut fiat massa

Divide in pilulas xxiv.

Dose: One to three immediately after dinner—to produce an easy, natural, non-diarrhœic evacuation.

Pilulæ Aperientes

I. Dr. Mitchell's

Pulv. aloes	gr. xxiv.
Pulv. rhei	gr. xlviij.
Hydrarg. subchlor.	gr. iv.
Antim. tartarat.	gr. ij.
Theriacæ	q.s.

ut fiat massa

Divide in pilulas xxiv.

Dose: One or more, as required.

II. Sir James Sawyer's

Aloes socot.	gr. j.–gr. iij.
Ferri sulphat.	gr. ¼
Ext. hyoscyami	gr. j.

Fiat pilula.

Dose: A pill to be taken at bedtime.

The amount of aloes to be adjusted to give a motion after breakfast each day.

III. Waugh's

Ext. nucis vomicæ .	gr. v.
Ext. aloes aquos. .	gr. v.
Ext. belladonnæ fol. alc. .	gr. iij.
Oleoresin. capsici .	gr. ij.

M. Fiat massa et divide in pilulas xx.

Dose: One pill after each meal until two passages occur in a day, then reduce to half a pill, and continue diminishing until the regularity of the bowels is established.

IV. Sir Andrew Clark's

Aloin., ferri sulph. exsicc., ext. nucis vom., pulv. myrrhæ, et pulv. saponis, aa. gr. ss. Fiat pilula.

Dose: One pill an hour before the last meal should the bowels not act during the day.

NOTE.—This formula was published in 1886, and the pills were specially recommended for anæmic people suffering from constipation, but have since become generally popular as an aperient and liver pill. If the fæces are dry and hard, and if there is no special weakness of the heart, pulv. ipecac. gr. ss. may be added to each pill. Should the action of the pill be preceded by griping and the character of the action be unequal, add ext. belladonnæ gr. ss. Sometimes the prescriber omitted ext. nuc. vom. 'Liver-pills (Sir Andrew Clark)' is recognised by the Board of Customs and Excise as a non-dutiable title. *See also* Pil. Aloin. Co., p. 737.

V. Epstein

Ext. colocynthidis .	gr. xxv.
Ext. aloes aquos. .	℈iiss.
Ext. hyoscyami .	gr. xiiss.
Ext. et pulv. glycyrrhizæ.	q.s.

Fiat massa et divide in pilulas L.

P.F. 34

Pulv. aloes soc. .	ʒj.
Hydrarg. subchloridi .	ʒss.
Pulv. jalapæ . .	ʒss.
Pulv. ipecac. . .	℈j.
Ol. cassiæ . .	℥ss.

Div. in pil. gr. iv.

P.F. 35

Aloes barbadensis .	gr. iij.
Oleoresin. capsici .	gr. ½
Saponis mollis .	q.s.

Div. in pil. iij.

Formulas for aperient pills might be quoted *ad infinitum*. There are many more in this section under specific names, such as Pil. Cathartic. Co., Pil. ad Prandium, &c., *which see*.

Pil. Arsenici Rubræ

(Dr. Wickham's)

Acidi arseniosi .	gr. vj.
Antim. sulphurat. .	ʒiss.
Pulv. glycyrrhizæ .	ʒss.
Pulv. saponis . .	℈j.
Ext. gentianæ. .	ʒj.

Fiat massa et divide in pilulas xlviij.

Coat with gelatin.

Dose: One at mealtimes thrice daily for dry eczema, dandruff, and the like.

Pilulæ Asiaticæ

(syn. *Pilules Arsenicalis Asiatique*; *Tanjore Pills*)

Acidi arseniosi .	gr. viiss.
Pulv. piper. nig. .	gr. lxxv.
Pulv. acaciæ . .	gr. xv.
Aquæ . . .	q.s. ut fiat massa

Divide in pilulas c.

Dose: One or two per day.

NOTE.—This is the original working formula, and it may be improved pharmaceutically by using

glycerine of tragacanth as an excipient. Each pill contains acid. arsenios. gr. $\frac{1}{16}$ (almost) and pulv. pip. nig. gr. $\frac{3}{4}$. Squire gives gr. $\frac{1}{12}$ and gr. $\frac{1}{2}$ with ext. gentian. gr. j., which is a modification of the British Skin Hospital's formula, and has been adopted by the B.P.C. *See also* Supplementary Chapter.

Pil. Arsenicalis Co.

(Startin's)

Acidi arseniosi . .	gr. v.
Pulv. acaciæ . . .	ʒss.
Pulv. cinnam. co. . .	ʒiij.
Ext. jalapæ . . .	ʒij.
Glycerini . . .	q.s.
	ut fiat massa

Divide in pilulas 100 æquales.

Dose: One pill or more twice daily.

Pil. Auri Chloridi Comp.

(Dr. Glennie's Pills for Impotency)

Auri et sodii chlor. . .	gr. iij.
Strychninæ sulphat. .	gr. j.
Zinci phosphidi . .	gr. iij.
Ext. damianæ. . .	ʒj.

Fiat massa et divide in pilulas xxx.

Coat with gelatin, or insert in gelatin capsules.

Dose: One thrice daily.

Pilulæ Benedictæ

(syn. *Fuller's Pills*)

Originally a pill composed of aloes (ʒvj.), senna (ʒiij.), asafetida, galbanum, and myrrh (of each ʒiss.), mace and saffron (ʒss.), sulphate of iron (ʒx.), and oil of amber (ʒj.), massed with honey and spirit, and divided into 5-gr. pills. Pil. aloes et asaf., B.P., is now considered its legitimate successor, but it lacks the iron, which, as an emmenagogue, is a most important ingredient.

Bilious and Liver Pills (Fall)

Pulv. ext. coloc. co. .	ʒiss.
Pulv. cambogiæ . .	ʒij.
Pulv. rhei . . .	ʒij.
Pulv. saponis . . .	ʒij.
Pulv. scammonii . .	ʒiij.
Pulv. capsici . . .	ʒj.
Pulv. antim. tart. .	gr. xviij.
Pil. hydrargyri . .	ʒiss.
Ol. carui . . .	ʒss.

Mix intimately and mass with proof spirit. Divide each 105 grains into twenty-four pills.

Blaud's Pills

The original Blaud's Pill is still a proprietary article, and is obtainable as such. The British Rêvenue Authorities, nevertheless, regard the pills made according to a published formula (*e.g.*, B.P. or French Codex), as a known, admitted, and approved remedy. The original formula (*C. & D.*, 1906, II., 505), called for gum-arabic 5 dissolved in 30·5 of water on a water-bath, add simple syrup 15, dried ferrous sulphate 30 and potassium carbonate 30, stir with an iron spatula and continue to heat on the water-bath to pill consistency; divide into 120 pills and silver.

Lucas and Stevens' Formula.

Glucose	ʒiiss.
Distilled water . .	ʒss.
Dried ferrous sulphate .	ʒiiss.

Mix and quickly add

Dried sodium carbonate	ʒiss. gr. v.

Mix and set aside for ten minutes, then add

Powdered tragacanth .	gr. xv
Powdered acacia . .	gr. L.

Mass.

Boisragon Pills (Dr. Hewson's)

Hydrarg. subchlor. .	gr. xij.
Pulv. scammonii . .	gr. xij.
Ext. coloc. co. . .	℈ij.
Pulv. aloes soc. . .	gr. viij.
Ol. carui . . .	♏iv.

Fiat massa cum aquâ, et divide in pilulas xij.

Dose: One or two at bedtime.

Pil. Cascaræ Sagradæ Comp.

I

Ext. nucis vom. .	gr. iss.
Iridin. . . .	gr. xij.
Euonymin. . .	gr. xij.
Ext. hyoscyam. .	gr. xij.
Ext. rhamni pursh. .	gr. xxxvj.

Fiat massa (c. pulv. glycyrrh.) et divide in pilulas xxiv.

Dose: One or two at bedtime.

II

Ext. cascaræ sagradæ .	gr. j.
Ext. gentianæ . .	gr. ss.
Euonymini . . .	gr. $\frac{1}{12}$
Iridini	gr. $\frac{1}{12}$
Ext. hyoscyami . .	gr. $\frac{1}{12}$
Ext. nucis vomicæ . .	gr. $\frac{1}{12}$

Fiat pilula.

Pil. Cathartic. Co., U.S.P.

Comp. colocynth extract	·8 grams
Calomel . . .	6 grams
Jalap resin . .	2 grams
Gamboge . .	1·5 gram

Diluted alcohol sufficient to make a mass, which divide into 100 pills.

Pil. Cathartic. Vegetabil., U.S.P.

Comp. colocynth extract	6 grams
Extract of henbane .	3 grams
Jalap resin . .	2 grams
Extract of leptandra	1·5 gram
Podophyllum resin .	1·5 gram
Oil of peppermint .	0·8 c.c.

Diluted alcohol sufficient to make a mass, which divide into 100 pills.

Chamomile-and-Rhubarb Pills

Rhubarb, in powder .	ʒij.
Socotrine aloes, in powder	ʒij.
Extract of chamomile .	ʒij.
Oil of caraway . .	ʒj.
Oil of cinnamon . .	ʒj.
Treacle .	a sufficiency to make a mass

Mix the oils with the rhubarb by triturating for five minutes; then add the aloes and extract, and mass. Divide into 3-gr. pills.

Dose: One pill may be taken one hour before dinner to restore the appetite. Two may be taken occasionally at bedtime, as a gentle aperient.

Christison's Aperient Pills

Pil. coloc. c. hyos. gr. ij., preferably made with scammony instead of scammony resin. *See C. & D.*, 1907, II., 951. 'Christison's Pills' is an exempted title.

Dose: One or two at bedtime.

Pil. Cochiæ

Pil. colocynth. co., B.P., gr. v.

[A small pill (gr. ij.) of aloes and soap is now more frequently given.]

Pil. Codeinæ Co.

(syn. *Antidiabetic Pills*)

Codeinæ . . .	gr. vj.
Ext. rhamni pursh. .	gr. xxiv.
Ext. lactucæ . .	ʒss.

Fiat massa et divide in pilulas xij.

Dose: One pill twice a day.

NOTE.—The dose of codeine is gradually increased.

Cough-pills

P.F. 47

Pulv. ammoniaci .	ʒij.
Pulv. scillæ . .	ʒiss.
Pulv. sapon. castil. .	ʒj.
Ext. hyoscyami . .	ʒss.
Pulv. ipecac. . .	ʒj.
Ol. anisi . . .	ʒj.
Theriacæ	q.s. ut fiat massa

Div. in pilulas gr. iij.–gr. v.

Pil. Cupri c. Opio

(syn. *Diarrhœa and Dysentery Pills*)

Pulv. cupri sulphat. .	gr. vj.
Pulv. opii . . .	gr. vj.
Ext. hæmatoxyli . .	gr. iij.
Glycer. tragacanth. .	q.s.

ut fiat massa

Divide in pilulas xij.

Dose: One pill every four hours.

Pilulæ Diureticæ

Pulv. scillæ	ʒj.
Pulv. digitalis	ʒss.
Hydrarg. subchlor.	gr. xv.
Pulv. opii	gr. xv.
Syrupi	q.s.
	ut fiat massa

Divide in pilulas LX.

Dose: One or two morning and evening.

NOTE.—This is an old, but most excellent, pill for dropsical cases.

Dzondi's Pills

One-grain pilules, each containing hydrarg. perchlor. gr. $\frac{1}{20}$. Used in syphilitic affections. The treatment commences with one pill four times daily, then after a week two pills, and so on, until thirty pills are taken daily.

Easton's Pills

(syn. *Pil. Trium Phosphatum, Martindale; Pil. Ferri Phosph. c. Quinin. et Strychnin., B.P.C.*)

Ferri phosphatis	gr. xvj.
Quininæ pur.	gr. xij.
Strychninæ	gr. ss.
Pulv. sacch. alb.	gr. viij.
Acid. phosphoric. conc.	gtt. xx.

Triturate the strychnine with the phosphate, add the rest of the powders, and mass quickly with the acid. Divide into sixteen pills.

Each pill equals 1 dr. of Easton's syrup. B.P.C. has quin. sulph. gr. j. in each pill with milk sugar.

Female Pills

Dr. Priestley's Pill for Relieving Menstrual Pain

Ext. belladonnæ	gr. $\frac{1}{3}$
Camphoræ	gr. iij.
Ext. hyoscyami	q.s.

Fiat pilula.

Dose: One pill every three or four hours.

For Amenorrhœa

Ferri sulphat. exsicc.	gr. xij.
Ext. nucis vom.	gr. iss.
Pil. aloes et myrrhæ	ʒss.
Apioli	♏x.
Pulv. tragac. co.	gr. v.

Mix the iron, tragacanth powder, and extract with the apiol, add the pill and sufficient dec. aloes co. conc. to mass. Divide into twelve pills.

Dose: One at twelve o'clock, and two at bedtime.

Another

Ferri sulph. exsic.	gr. xij.
Ext. aloes aquos.	gr. xij.
Ext. hellebor. nig.	gr. xij.
Ergotin.	gr. xv.
Ol. sabinæ	♏vj.

Fiat massa et divide in pilulas xij.

This pill cannot be retailed without conforming to the regulations for the sale of poisons. The formula is a modification of one like

Hooper's

Ext. aloes aquos.	gr. xij.
Ferri sulph. exsicc.	gr. vj.
Ext. hellebor. nig.	gr. vj.
Pulv. myrrhæ	gr. iij.
Pulv. canellæ	gr. iij.
Pulv. zingiberis	gr. iij.
Dec. aloes co. conc.	q.s.
	ut fiat massa

Divide in pilulas xij.

Dose: One thrice daily.

Dr. MacIntosh's

Quininæ sulphat.	gr. xij.
Camphoræ	gr. xij.
Pulv. ipecacuanhæ	gr. vj.
Pulv. opii	gr. iij.
Ext. stramonii	gr. iij.
Glycer. tragacanth.	q.s.
	ut fiat massa

Divide in pilulas xij.

Dose: One three times a day,

beginning three days before the period, and continuing for two days after it commences.

Dr. Tarrant's

Ferri sulphat. . .	gr. xxiv.
Pulv. aloes soc. .	gr. xxiv.
Pulv. myrrhæ . .	gr. xxiv.
Ol. pulegii . .	♏iv.
Ext. glycyrrh. .	gr. xxiv.

M. Ft. pil. xxiv.

Chamomile, Pennyroyal, and Steel

Ferri sulphat. exsic. .	ʒj.
Pulv. aloes . . .	ʒj.
Pulv. myrrhæ . . .	ʒss.
Ol. pulegii . . .	ʒj.
Ext. anthemidis . .	ʒiss.

Triturate the oil with the powders, mass with the extract, and divide into 4-gr. pills.

Dose: One thrice daily, increased, if necessary, to two pills.

Pil. Ferri et Arsenici

Ferri redacti . .	gr. xxiv.
Quininæ sulphat. .	gr. xxxvj.
Acid. arseniosi . .	gr. j.
Ext. nucis vom. . .	gr. vj.
Glycer. tragacanth. .	q.s. ut fiat massa

Divide in pilulas xxiv.

Dose: One pill after food thrice daily for anæmia accompanied by nervousness.

Each B.P.C. pill contains ferri sulph. exsic. gr. iij. and acid. arsenios. gr. $\frac{1}{5}$.

Pil. Ferri Carbonatis

(Vallet)

Ferri sulphat. . . .	ʒiiss.
Sodii bicarbonat. . .	ʒij.
Syrupi	ʒx.
Aq.	ʒix.

Boil the water, and to 3 oz. add half of the syrup. Dissolve the sulphate in this portion. In the rest of the water and syrup dissolve the carbonate, and mix the solutions. Collect the precipitate on calico, wash with sweetened water, press the precipitate, add it to

Pulv. sacch. alb. . .	gr. xxiv.
Mellis	℈iv.

Evaporate on a water-bath to a pilular consistence, and divide into 4-gr. pills.

Dose: As Blaud's pills.

Pil. Ferri Co., U.S.P., 1880

(Griffith's)

Pulv. myrrhæ . . .	ʒiiss.
Sodii carbonatis . .	gr. lxxv.
Ferri sulphatis . .	gr. lxxv.
Syrupi	q.s.

Rub the myrrh (freshly powdered) with the carbonate, then with the sulphate, and beat into a mass with the syrup. Divide into 100 pills.

Pil. Ferri Iodidi Comp.

(Dr. Buckler's)

Iodi	gr. ij.
Ferri iodidi . . .	℈j.
Potassii iodidi . .	℈ij.
Ext. conii . . .	℈j.

Triturate the first three ingredients until quite smooth; mass with the extract and a little powdered sugar, and divide into twenty pills.

Dose: One three times daily half an hour after food in scrofulous affections.

Pil. Ferri Protochloridi

Iron wire, cut small .	ʒij.
Hydrochloric acid . .	ʒj.
Water	ʒij.

Mix in a flask, and heat gently until effervescence ceases, boil for a few minutes, and evaporate until it

crystallises on stirring; then mass with

Powdered sugar	℈x.
Powdered liquorice	℈x.
Powdered tragacanth	℈j.

Divide into 144 pills, and varnish with tolu.

Dose: One or more thrice daily for anæmia.

NOTE.—Protochloride of iron in crystals may be used if available—viz., 288 gr. for the gross of pills.

Gout and Rheumatic Pills

(syn. *Antilithic Pills; Pilulæ Antiarthriticæ*)

I. Becquerel's

Quininæ sulphat.	gr. xv.
Pulv. colchici sem.	gr. xv.
Ext. digitalis	gr. vj.
Glycer. tragacanth.	q.s. ut fiat massa

Divide in pilulas xx.

Dose: One twice or thrice a day.

II. Sir Benjamin Brodie's

(*Pil. Colchic. et Hydrarg., B.P.C.*)

Ext. coloc. co.	gr. xvj.
Ext. rhei	gr. xvj.
Pil. hydrarg.	gr. xvj.
Ext. colchici acet.	gr. vj.

Fiat massa et divide in pilulas xij.

Dose: One or two at bedtime.

III. Budie's

Ext. coloc. co.	gr. xxiv.
Ext. colchici	gr. xij.
Hydrarg. c. cretâ	gr. xij.
Syrupi	q.s. ut fiat massa

Divide in pilulas xij.

Dose: One at bedtime.

IV. Sir A. B. Garrod's

Ext. colchici acet.	gr. vj.
Ext. rhei	gr. vj.
Ext. aloes socot.	gr. vj.
Ext. belladonnæ	gr. j.

Fiat massa et divide in pilulas vj.

Dose: One at bedtime twice a week.

V. Similar to Laville's

Extract of winter cherry	ʒiij.
Silicate of sodium	ʒj.

Make a mass and divide into 5-gr. pills.

Dose: Four to ten pills daily.

The latest analysis (*C. & D.*, 1907, I., 877) gives also guaiacum resin and marshmallow as constituents.

VI. A Stock Pill

Ext. coloc. co.	ʒxij.
Pil. hydrarg.	ʒvij. gr. xij.
Ext. colchic. acet.	ʒiv. gr. xlviij.
Pulv. ipecac. co.	ʒiv. gr. xlviij.
Syrup. et glycer. tragacanth.	q.s. ut fiat massa

Of this mass 100 gr. is to be divided into twenty-four pills, which are to be rolled in the following powder:—

Pulv. glycyrrh.	ʒij.
Pulv. amyli	ʒij.
Pulv. cretæ gall.	ʒj.

Mix and sift through a fine sieve.

Dose: One at bedtime.

P.F. 60

Pulv. ipecac. co. gr. ij.-gr. v. in pil.

P.F. 61

Potass. iodidi	gr. j.
Ext. colchici acetic.	gr. ss.
Pil. rhei co.	gr. j.

Fiat pilula.

P.F. 62

Pulv. ipecac. co.	gr. iij.
Potass. iodidi	gr. ij.
Excipientis	q.s.

Divide in pilulas duas.

P.F. 63

Pulv. opii	gr. xij.
Ext. colchici acet.	gr. xlviij.
Ext. hyoscyami	gr. xlviij.
Pil. hydrargyri	gr. xcvj.
Ext. colocynth. co.	gr. xcvj.

Misce et divide in pilulas xcvj.

Pilulæ Gummosæ

Galbanum, opoponax, myrrh, and sagapenum, of each ʒj., asafetida ʒss. Reduce to powder, mass with saffron syrup, and divide into 5-gr. pills.

Halyburton's Pills

Aloes barb. . . .	gr. ¾
Podophyllini . . .	gr. ½
Ext. hyoscyami . .	gr. ij.

Ft. pil.

One a dose.

Dr. Hamilton, Jun.'s, Pills

Ext. coloc. co. . .	ʒj.
Ext. hyoscyami . .	ʒss.

M. et divide in pilulas xxiv.

NOTE.—Pil. coloc. et hyos., B.P., gr. v., is frequently, but erroneously, given for the above. Hamilton, Sen.'s, pills are the old Edinburgh Pharmacopœia aloetic pill—viz., equal parts of soap and Socotrine aloes. See *C. & D.*, 1907, II., 951. 'Hamilton's Pills' has been recognised by the Board of Customs and Excise as a non-dutiable title.

Heim's Pills

(*Pil. Digitalis et Opii Co., B.P.C.*)

Quininæ sulphat. . .	gr. xij.
Pulv. digitalis . . .	gr. vj.
Pulv. opii . . .	gr. iij.
Pulv. ipecac. . . .	gr. ij.
Glycer. tragacanth. .	q.s.
(B.P.C., syr. glucosi)	

Fiat massa et divide in pilulas xij.

Dose: One every six hours.

NOTE.—Dr. Heim's name is connected with various pills, but the above one (used for checking night sweats in phthisis) is best known in England.

Pilulæ Helvetii

Pulv. aluminis . .	ʒv.
Pulv. sang. draconis .	ʒiiss.
Mellis	ʒiiss.

Fiat massa et divide in pilulas cc.

Dose: One pill twice to five times a day for cough and hæmorrhage.

Pilulæ Imperiales

(syn. *Kaiserpillen or King's Pills*)

Pulv. jalapæ resin. . .	ʒj.
Pulv. aloes . . .	ʒj.
Hydrarg. subchlor. . .	ʒss.
Pulv. colocynthid. . .	gr. xv.
Ext. gentian. . . .	ʒss.

Mix thoroughly, and mass with a few drops of water. Divide into 100 pills.

NOTE.—This is a favourite household pill in Germany.

Indigestion-pills

P.F. 14

Ext. nuc. vom. alcohol. .	gr. ¼
Sodii carb. exsicc. . .	gr. ij.
Ext. gentian. . . .	gr. j.
Pulv. zingib. . . .	gr. j.
Pulv. capsici . . .	gr. ¼

Fiat pilula.

Dose: One after each meal.

Kidney-pills

P.F. 4

Pulv. buchu . .	gr. ss.
Pulv. uvæ ursi . .	gr. ¼
Potass. nitrat. . .	gr. j.
Pulv. digitalis . .	gr. ⅛
Ol. juniperis . . .	gtt. ss.

Fiat pilula.

P.F. 5

Ext. cascaræ sagradæ .	gr. ¼
Ext. hyoscyami . .	gr. j.
Ext. taraxaci . . .	gr. j.
Potassii nitratis . .	gr. ij.

Fiat pilula.

Lapactic Pills

Aloini	gr. ¼
Strychninæ	gr. 1/60
Ex. belladonnæ vir.	gr. ⅛
Pulv. ipecacuanhæ	gr. 1/16

Fiat pilula.

Pil. Lithii Comp.
(Dr. Hugh Lane's)

Lithii benzoat.	ʒss.
Sulphur. præcip.	℈j.
Quininæ salicyl.	gr. iv.
Glycer. tragacanth.	q.s.

ut fiat massa

Divide in pilulas xij.

Liver-pills
(Shermann Bigg)

Calomelanos	gr. ij.
Euonymini	gr. ij.
Podophyllini	gr. ij.
Pulv. ipecacuanhæ	gr. ij.
Ext. aloes socot.	℈j.

Fiat massa et div. in pil. xx.

One after breakfast and another after dinner.

Livingstone's Rousers

Pulv. resin. jalap.	gr. xviij.
Pulv. rhei	gr. xviij.
Hydrarg. subchlor.	gr. ix.
Quininæ sulph.	gr. ix.
Dec. aloes co. conc.	q.s.

ut fiat massa

Divide in pilulas xij.

Dose: Two or three pills every four hours until they purge efficiently.

NOTE.—This was the favourite fever-pill of Dr. David Livingstone, the African traveller, and is still much used in tropical countries for warding off impending fever.

Pilulæ Metallorum, N.F.

Ferri redacti	℈j.
Quininæ sulphat.	℈j.
Strychninæ	gr. j.
Acidi arseniosi	gr. j.
Glycer. tragacanth.	q.s.

ut fiat massa

Divide in pilulas xx.

Dr. Mair's Pills

Pulv. ipecacuanhæ	gr. xxv.
Pulv. scammonii	ʒij.
Ext. aloes aquosi	ʒij.
Ext. hyoscyami	ʒij.

Fiat massa et divide in pilulas gr. v.

This is a well-known Edinburgh non-proprietary pill in common demand by the public.

Morison's Pills

Aloes, jalap resin, extract of colocynth, and gamboge, of each gr. xv.; rhubarb and myrrh, of each ʒss. Mass and divide into fifty pills.

This formula is from the Belgian Pharmacopœia. The most recent analysis shows (as far as analysis can) that the pills contain aloes, gamboge, jalap resin, and cream of tartar, but not a trace of colocynth.

Nervine Pills

Zinci oxidi	℈j.
Caffeinæ citrat.	℈j.
Glyc. tragacanth.	q.s.

ut fiat massa

Divide in pilulas xx.

Dose: One every four hours.

Neuralgic Pills

1. Brown-Séquard's

Extract of henbane	ʒiss.
Extract of hemlock	ʒiss.
Extract of ignatia	ʒj.
Extract of opium	ʒj.
Extract of aconite	℈ij.
Extract of Indian hemp	ʒss.
Extract of stramonium	gr. xxiv.
Extract of belladonna	℈j.

Mix and make into 3-gr. pills.

Dose: One, to be repeated in four hours if necessary.

II. Gross's

Sulphate of quinine	ʒj.
Sulphate of morphine	gr. iss.
Strychnine	gr. j.
Arsenious acid	gr. iss.
Extract of aconite	ʒss.

Mix the powders intimately, and mass with the extract and sufficient glycerine of tragacanth. Divide into thirty pills.

Dose: One pill every four or six hours, but not more than three to be taken in a day.

III. Dr. Prosser James's

Quininæ sulphat.	gr. xvj.
Ext. aconiti alcohol.	gr. j.
Glycer. tragacanth.	q.s. ut fiat massa

Divide in pilulas xvj.

Dose: One every two, three, or four hours. In severe cases two for the first dose.

IV. Dr. Neligan's

Quininæ valerianat.	gr. j.
Ext. quassiæ	gr. ij.

Fiat pilula.

Dose: One every four hours in the intermittent neuralgia of hysterical women.

V. For Stock

Butyl-chloral. hydratis	gr. iij.
Ext. gelsem. alcohol.	gr. ss.
Glycer. tragacanth.	q.s.

Fiat pilula.

Dose: One every two hours.

VI

Dried sulphate of iron	ʒj.
Sulphate of quinine	ʒss.
Gingerin	℈j.
Hydrochloride of morphine	℈ij.
Extract of henbane	ʒj.
Glycerine of tragacanth	a sufficiency.

Triturate the quinine and morphine with the dried sulphate of iron, then add the gingerin and the extract, using as much glycerine of tragacanth as will make a good mass, which beat well to incorporate the ingredients thoroughly. Divide into 3-gr. pills, and roll in French chalk and starch.

Dose: One pill, morning, noon, and night, while the pain lasts. Two may be taken at bedtime, if necessary.

Little Neuralgia-pills

P.F. 46

Ext. gelsemii alc.	gr. $\frac{1}{16}$
Ferri carb. sacch.	gr. $\frac{1}{8}$

Fiat pilula.

P.F. 47

Ext. gelsemii alc.	gr. $\frac{1}{8}$
Pil. galbani co., B.P.	gr. ij.

Fiat pilula.

Niemeyer's Pills

Pulv. scillæ	gr. j.
Pulv. digitalis	gr. j.
Pil. hydrarg.	gr. j.
Glycer. tragacanth.	q.s.

Ft. pilula.

NOTE. — Heim's pill without ipecacuanha is sometimes given; but the above is better suited for dropsy.

Pil. Opii et Camphoræ, N.F.

Pulv. opii	gr. j.
Pulv. camphoræ	gr. ij.
[Glycer. tragacanth.	q.s ut fiat pilula]

Pennyroyal-and-Steel Pills

Ferri sulphatis	ʒiv.
Acid. sulphuric. pur.	♏x.
Pulv. myrrhæ	ʒss.
Pulv. aloes socot.	ʒss.
Ol. pulegii	ʒj.

Fiat massa et divide in pilula gr. iv.

Pil. Phosphori

I. Allen & Hanburys'

Phosphori . . .	gr. j.
Carbon. bisulph. .	♏x. vel q.s.

Solve.

Pulv. saponis . .	gr. xxxv.
Pulv. resin. guaiaci .	gr. xxxv.
Glycerin. . . .	gtt. xij.
Pulv. glycyrrh.	gr. xij. vel q.s. ut fiat massa ♆v.

To be divided into pills of the strength required, and varnished or pearl-coated.

II. Martindale's

Phosphorus . . .	gr. v.
Oil of theobroma .	ʒviij. gr. x.

Heat, say, 1½ oz. of theobroma oil to 300° F., keep it at that for five minutes, and weigh the above amount into a wide-necked bottle; when cooled to 130° F. add the phosphorus, cork, and shake until it solidifies (= 1 per cent.). When required beat a sufficiency in a mortar until soft enough to roll into pills.

Sevum Phosphoratum (10 per cent.), Ext. Phar. and B.P.C., is better. It is composed of phosphorus 1, pure carbon bisulphide 5; dissolve and add prepared suet 9. Allow the bisulphide to evaporate.

III. R. H. Parker's

Phosphorus . . .	gr. ss.
Carbon bisulphide .	ʒss.
Powdered liquorice .	gr. xxiv.
Glycerine . . .	♏iv.
Powdered tragacanth	gr. ij.
Syrup . . .	a sufficiency

Dissolve the phosphorus in the bisulphide, and pour upon the mixed powders; stir with a spatula until the bisulphide is nearly evaporated (the powder not becoming dry), mass with syrup, and divide into twenty-four pills.

The above quantity of phosphorus provides a pill containing gr. $\frac{1}{48}$. Any other desired quantity of phosphorus may be used with the same quantities of other ingredients.

Pil. Picis

Black pitch . . .	ʒiiiss.
Powdered liquorice .	ʒj.
Powdered ginger .	ʒss.

Melt the pitch and stir in the powders. Roll the mass out on a warm slab, and divide into 5-gr. pills.

Pilulæ ad Prandium

(syn. *Digestive Pills; Dinner-pills*)

I. Chapman's, N.F.

(*Pil. Aloes et Ipecac., B.P.C.*)

Ext. aloes aquos. .	gr. xviij.
Pulv. mastiche .	gr. xviij.
Pulv. ipecacuanhæ .	gr. xij.
Ol. fœniculi . .	♏iij.

[Fiat massa c. dec. aloes co. conc. et divide in pilulas xij.]

II. Cole's, N.F.

Ex. aloes aquos. .	ʒj.
Pil. hydrargyri .	ʒj.
Pulv. jalapæ . .	ʒj.
Antimon. tartarat. .	gr. j.

Mass as No. 1., and divide into fifty pills.

III. Gregory's

(*Pil. Aloes, Ipecac. et Rhei, B.P.C.*)

Ext. aloes aquos. .	gr. xij.
Pulv. rhei . .	gr. xij.
Pulv. ipecacuanhæ .	gr. xij.
Pulv. saponis . .	gr. xij.

[Fiat massa c. aquâ et divide in pilulas xij.]

NOTE.—Pil. colocynth. co. gr. v. is commonly sold as 'Dr. Gregory's Pills' in the United Kingdom.

IV. Hooper's

Aloes socotrinæ	. .	ʒss.
Pulv. zingiberis	. .	ʒss.
Ext. anthemidis	. .	℈ij.

Fiat massa et divide in pilulas xx.

V. For Stock

Ext. aloes aq.	. .	gr. vj.
Pulv. rhei	. . .	gr. xij.
Pulv. capsici	. . .	gr. vj.
Pepsin.	. . . .	gr. xij.
Ext. gentianæ	. .	q.s.

ut fiat massa

Divide in pilulas xij.

VI. Burney Yeo's

(*Pil. Aloes et Ipecac. Co.*, B.P.C.)

Ext. aloes bbds.	.	gr. xviij.
Pulv. ipecac.	. . .	gr. vj.
Ext. nucis vom.	. .	gr. vj.
Quininæ sulph.	. .	gr. xij.
Pulv. saponis	. . .	gr. vj.

Fiat massa et divide in pilulas xij.

NOTE.—One or two of any of these pills to be taken immediately before dinner.

Pil. Olei Ricini

I

Ext. aloes aquos.	. .	ʒiv.
Pulv. saponis	. .	ʒj.
Gingerin.	. . .	ʒj.

Mix and mass with a few drops of dec. aloes co. conc. Divide into ½-gr. pills.

II

Pulv. rhei	. . .	ʒiss.
Pulv. potas. sulph.	. .	ʒiss.
Pulv. saponis	. .	ʒss.
Ol. ricini	. . .	ʒss.
Ol. croton.	. . .	♏v.

Mix intimately and mass with thin treacle. Roll quickly into 5-gr. pills.

Also any mild aperient pills labelled 'Aperient Pills, mild as castor oil.'

Pilulæ Quadruplices, N.F.

One grain each of ferri sulph. exsicc., quin. sulph., and aloes purif., with ext. nucis vom. gr. ¼, made into a pill with ext. gentianæ.

Rheumatic Pills

P.F. 12

Quininæ	. . .	gr. j.
Pulv. ipecac.	. . .	gr. ss.

Fiat pilula.

Pil. Rhei Co.

(Unofficial)

Pulv. rhei	. . .	ʒj.
Pulv. myrrhæ	. .	ʒss.
Pulv. saponis castil.	.	ʒss.
Pulv. aloes soc.	. .	ʒvj.
Ol. carui	. . .	ʒss.
Theriacæ	. . .	q.s.

Fiat massa et divide in pilulas gr. v.

Pil. Rhei et Cinchonæ

(syn. *King's Pills*)

Pulv. cinchonæ	. .	gr. j.
Pulv. aloes	. . .	gr. j.
Ext. rhei	. . .	gr. j.
Ext. taraxaci	. . .	gr. j.

Fiat pilula.

(*See also* Pil. Imperiales.)

Ricord's Pills

I. Pil. Calomel. Co.

Hydrarg. subchlor.	. .	gr. xv.
Pulv. conii	. . .	ʒss.
Pulv. saponis	. . .	ʒss.

Fiat massa c. aquâ et divide in pilulas xx.

Dose: One pill; increase by one every five days until six are taken, then diminish the number in the same manner.

II. Pil. Camphrées

Camphor and lactucarium of each 45 gr., massed and divided into twenty pills. Dose: Five or six per day.

III. Pil. Opiacées Camphrées

Camphor 45 gr. and opium extract 6 gr. made into a mass with mucilage and divided into sixteen pills, of which two or three are taken in the morning.

IV. Pil. Protoiodure de Mercure

Hydrarg. iodid. flav.	.	gr. XLV.
Lactucarii	.	gr. XLV.
Ext. opii	.	gr. xv.
Ext. conii	.	gr. lxxv.

Fiat massa et divide in pilulas LX.

Dose: One pill in the morning, and another after dinner.

Pil. Roborans

An old pill sometimes made by massing rhubarb with Venice turpentine. The following is a formula in use at the end of the eighteenth century:—

Ferri peroxid.	.	ʒij.
Asafetidæ	.	ʒij.
Res. guaiaci	.	ʒij.
Pulv. opii	.	℈j.
Ext. cinchonæ	.	ʒij.
Ext. gentianæ.	.	ʒij.
Syrupi	.	q.s. ut fiat massa

Divide in pil. gr. v.

Pil. Rufi

Pil. aloes et myrrhæ, B.P., 1885, now B.P.C., viz.: Aloes soc. gr. ij., myrrh. gr. j., croci gr. ss., theriac. et glycerin. aa. q.s.

Squibb's Podophyllum Pills

(syn. *Pil. Podoph., Bellad., et Capsici*)

Res. podophyll.	.	gr. vj.
Ext. bellad. fol. alc.	.	gr. iij.
Pulv. capsici	.	gr. xij.
Pulv. sacch. lact.	.	gr. xxiv.
Pulv. acaciæ	.	gr. vj.
Glycerini et syrupi	.	q.s.

Divide into twenty-four pills.

Stomach and Liver Pills

Pulv. rhei	.	ʒss.
Pulv. jalapæ	.	ʒss.
Pulv. aloes socot.	.	ʒj.
Pulv. capsici	.	ʒj.
Pil. hydrargyri	.	ʒss.
Ol. carui	.	♏xv.
Theriacæ	.	q.s.

Fiat massa et divide in pilulas gr. iij. vel gr. v.

Pil. Terebinthinæ Chiæ
(Prof. John Clay's)

Terebinth. chiæ	.	ʒiss.
Sulphur. subl.	.	ʒj.

Mass in a warm mortar, and divide into thirty pills.

Dr. Thomson's Pills

Pulv. aloes socot.	.	ʒvj.
Pulv. mastic.	.	ʒij.
Ext. gentianæ.	.	ʒiss. gr. vij.
Pulv. gentianæ	.	ʒiss. gr. vij.

Fiat massa et divide in pilulas gr. iv.

B.P.C. the name is given as a synonym for Pil. Aloes et Mastiche.

Tic and Neuralgia Pills

Ferri et quinin. cit. gr. ij. in pil. sing.

One every three or four hours as required.

Tonic Pills

Pulv. ipecacuanhæ	.	gr. ss.
Ferri sulphat. exsic.	.	gr. ij.
Ext. anthemidis	.	q.s.

Fiat pilula.

Tonic Digestive Pills

Pulv. ipecac.	.	gr. xxiv.
Ext. nucis vom.	.	gr. xxiv.
Ext. aloes aquos.	.	gr. xcvj.
Pulv. rhei	.	gr. xcvj.
Pulv. saponis	.	gr. xlviij.
Oleoresin. zingiberis	.	q.s.

Fiat massa et div. in pil. xcvj.

Tonic Liver-pills

Pil. hydrargyri	gr. iss.
Aloini	gr. ½
Oleores. zingiberis	gr. ¼
Jalapini	gr. ¼

Fiat pilula.

Pilulæ Triplices

I. N.F.

Aloes purificat.	gr. xxiv.
Pil. hydrargyri	gr. xij.
Res. podophylli	gr. iij.

[Fiat massa c. dec. aloes co. conc. et divide in pilulas xij.]

II. Dr. John W. Francis', N.F.

Aloes purificat.	℈iiss.
Scammonii	℈iiss.
Pil. hydrargyri	℈iiss.
Ol. crotonis	♏iij.
Ol. carui	♏xv.
Tr. aloes et myrrhæ	q.s.

Fiat massa et divide in pilulas LX.

Pil. Tussi

(Brooke-Muriel)

Ext. conii	ʒj.
Ext. lactucæ	ʒj.
Ext. hyoscy.	ʒj.
Pulv. ipecac. co.	ʒj.

Fiat massa et divide in pilulas LX.

Dose: One morning and evening.

Warburg's Fever-pills

(syn. *Pil. Antiperiodic.*, *N.F.*)

Extract of aloes	gr. xxiv.
Rhubarb	gr. xij.
Angelica-seed	gr. xij.
Elecampane	gr. vj.
Saffron	gr. vj.
Fennel	gr. vj.
Zedoary-root	gr. iij.
Cubebs	gr. iij.
Myrrh	gr. iij.
White agaric	gr. iij.
Camphor	gr. iij.
Sulphate of quinine	ʒss.
Extract of gentian	a sufficiency

Reduce the drugs to a fine uniform powder, and mass with extract of gentian. Divide into twenty-four pills.

NOTE.—The aloes should be omitted if a non-purging pill is desired. Each pill represents a teaspoonful of the tincture.

Wind and Indigestion Pills

P.F. 4

Pil. rhei co., B.P., gr. iv.

One before dinner daily, and two at bedtime.

Pill-coating Solutions

Gelatin

Gelatin (best French)	ʒiiss.
Acacia mucilage	ʒiss.
Boric acid	ʒiij.
Distilled water	℥viiss.

Dissolve the acid in the water, and in the solution immerse the gelatin until soft; dissolve on a water-bath and add the mucilage, stirring all the time.

Pearl Coating

I

Acacia mucilage	ʒj.
Tragacanth mucilage	ʒj.
Syrup	ʒj.
Water	℥iv.

Mix.

II

Tr. tolutan.	ʒj.
Syrupi	ʒj.
Mucilag. acaciæ	ʒj.

M.

NOTE.—Pearl coating is an art which can only be acquired by practice. The requisites on the small scale are an evaporating-dish and two globular-shaped tin boxes or, failing them, covered pots. The best powder for coating is French chalk, alone or mixed with light magnesium carbonate in the proportion of 1 oz. to 2 lbs. of chalk, 5 to 10 drops of a solution of methyl blue being mixed with the powder to counteract its yellow tint. The powder should be sifted

several times through a fine sieve. The pills are to be moistened with the solution in the dish; this must not be overdone, otherwise the pearl coating will be too thick; then, without delay, transfer them to one of the boxes containing plenty of powder, and rotate rapidly. Next, transfer to and rotate in the second box without chalk, in order to impart a polish.

Sugar Coating

On the retail scale the best plan is to proceed as for pearl coating, using a mixture of pearl-coating powder 7 parts and sugar 1 part, or ½ dr. of saccharin to the pound of French chalk. The true sugar coating is done with sugar syrup containing a small percentage of starch, applied by means of a revolving pan.

Pill-excipients

I. Dispensing-syrup.—Equal parts by volume of glycerine, acacia mucilage, and syrup.

II. Roe's, for ess. oils, phenol, &c.—Soak gelatin ʒvj. in warm water for a few minutes, drain, and put into a dish with glycerine ʒij.; dissolve and bottle. A grain suffices for 2 minims of oils, &c. Melt the jelly on a slab, add the oils, work well, and mass with fullers' earth, flour, soap, or pulv. trag. co., according to the nature of the ingredient.

III. Martindale's Kaolin Ointment.—Vaseline ʒj., paraffin ʒj. Melt and add sifted kaolin ʒj. Stir until cold.

IV. Remington's General.—White glucose ʒiv., powdered acacia ʒiss., benzoic acid gr. j., glycerine ʒj. (by weight).

V. Theriacanth.—Rub tragacanth ʒj. with rectified spirit ʒij. in a mortar; then add quickly treacle ʒij. (previously made fluid by warming), and thoroughly mix.

Pill-varnishes

I. Tolu syrup residues ʒj., ether ʒiij. Dissolve and allow to stand until clear. Decant the clear portion.

II. Sandarac ʒv., tr. tolu ʒij., ether to ʒij. Dissolve.

III. Sandarac ʒj., resin ʒij., ether ʒvj. Dissolve.

IV. (Martindale's). — Sandarac ʒj., absolute alcohol ʒj. Dissolve.

This is much too thick; S. V. R. ʒij. is better.

PULVERES—POWDERS

Pulvis Acaciæ Comp.

(syn. *Pulv. Gummosus, Ph. Germ.*)

N.F.

Pulv. acaciæ . .	pt. L.
Pulv. glycyrrhizæ .	pt. xxxiv.
Pulv. sacch. alb. .	pt. xvj.

Mix intimately by sifting.

B.P.C.

Powdered acacia and tragacanth gums, equal parts mixed. Used as an absorbent pill-excipient.

C.F.

Powdered acacia, tragacanth, starch, and sugar, of each ʒv., powdered boric acid ʒj. Mix thoroughly. Recommended as an emulsifying-agent. This is also known as *Acamulsia* (see *C. & D.*, 1899, I., 580). In using it, 8 oz. of oil is put into a quart bottle and shaken up, then ½ oz. of the powder and again well shaken, finally 8 oz. of water, and shaken vigorously for two or three minutes.

Pulvis Acetanilidi Co. Ex-N.F.

Acetanilidi . . .	gr. L.
Caffeinæ . . .	gr. ij.
Acid. tartaric. . .	gr. iij.
Sodii bicarbonatis. .	gr. XLV.

All in powder; mix.

Dose: Gr. v. to gr. x. every four hours for neuralgia.

Br.P.C., C.F., U.S.P., and B.P.C.

Acetanilide 7, caffeine 1, sodium bicarbonate 2. Dose: 3 to 5 gr.

Pulvis Alkalinus Comp.

(Dr. Robert Bell's)

Pepsin.	ʒiij.
Pulv. aromat. . .	ʒiij.
Pulv. sodii bicarb. .	ʒj.
Mag. carb. pond. . .	ʒss.

Mix by sifting.

Dose: Half a teaspoonful or more in a little water after food. For indigestion.

(syn. *Pulv. Potass. Co., T.H.P.*)

Pulv. potass. chlorat. .	ʒj.
Pulv. potass. bicarb. .	ʒj.
Pulv. sodii chloridi .	ʒss.

A teaspoonful in a small tumbler of hot water; to be drawn through the nose each evening for post-nasal catarrh.

Pulv. Alkalinus Co., B.P.C., is sodium bicarbonate, sodium chloride, and borax, of each ʒj. Used for nasal douche.

Pulvis Antiasthmaticus

(syn. *Asthma-cure*)

I. (Himrod's Style)

Pulv. lobeliæ . . .	ʒij.
Pulv. stramon. fol. . .	ʒij.
Pulv. theæ nigræ . .	ʒij.
Pulv. potas. nit. . .	ʒij.

Pulv. Lobeliæ Co., B.P.C., is above with ol. anisi ɱiv.

II

(As modified by Sir Morell Mackenzie)

To the mixture No. I. add

Pulv. anisi . . .	ʒij.
Pulv. fœniculi . .	ʒij.

The first formula for pulv. antiasthmat. was published by Mr. J. S. Hearn, an American pharmacist, in 1883. In his monograph on 'Hay-fever' the late Sir M. Mackenzie remarked:—'A patent American remedy, consisting of nitrate of potash and powdered herbs, of which stramonium or datura tatula is probably the most important, is sold under the name of "Himrod's cure," and when this powder is lighted and the fumes inhaled they sometimes quickly relieve the spasm.' This footnote was added:—'The original formula of this remedy has been published in *The Chemist and Druggist* (December, 1883). It is said to consist of stramonium, lobelia inflata, black tea, and nitre in equal parts. If a little powdered aniseed or fennel be added to this preparation, it certainly produces a compound which in appearance and effect is very similar to Himrod's remedy. Careful microscopical examination made at my request by those familiar with vegetable structures has, however, failed to detect any tea-leaf in Himrod's preparation, though, of course, it is readily seen in specimens of powder prepared according to the formula just given. On the other hand, bearing in mind the fact mentioned in the text, that tea when drunk often gives relief to asthmatics, it is not at all improbable that the herb may have some effect if burned and inhaled.'

The 'Extra Pharmacopœia' gives a similar formula to the second, and calls it 'Pulv. Lobeliæ Co.,' which is the title of a well-known

eclectic powder (*vide infra*) as well as a B.P.C. title (*see* p. 753). Squire's 'Companion' gives a mixture of powdered stramonium, datura tatula, Indian hemp, and lobelia, each ℥vj., nitre ʒj., and eucalyptus oil ℥ss. This is called 'Pulv. Stramonii Co.' The B.P.C. uses the same title for Sir James Sawyer's modification (*see* p. 753 and Supplementary Chapter).

Asthma-powder
P.F. 8

Stramonium, lobelia, potassium nitrate, belladonna-leaves, and tea-dust, equal parts.

Crevoisier's Asthma-powder

Powdered belladonna-leaves . . .
Powdered foxglove . .
Powdered stramonium . } of each equal parts
Powdered sage . .
Powdered potassium nitrate . . .

Press into ʒj. tablets.

Pulvis Antidiabeticus
(Dr. Monin's)

Sodii bicarbonatis . .	℥ij.
Sodii benzoatis . .	ʒx.
Sodii salicylatis . .	ʒv.
Lithii carbonatis . .	ʒiv.

Dose: A teaspoonful at each meal.

Aperient Powder for Children
P.F. 4

Pulv. jalapæ . . .	℥ss.
Hydrarg. subchlor. .	℥ss.
Pulv. antimonial. . .	ʒij.
Ol. cassiæ . . .	♏xv.

Dose: 3 to 9 grains.

Pulvis Aromaticus, B.P. 1864

Cinnamon . . .	4 oz.
Nutmeg	3 oz.
Saffron	3 oz.
Cloves	1½ oz.
Cardamoms freed from their capsules . .	1 oz.
Refined sugar . . .	25 oz.

Reduce separately to fine powder, mix, and pass through a fine sieve.

This is the powder required for the original Board of Health cholera-mixture.

Pulvis Basilicus
(*Pulv. Hydrarg. Subchlor. Co., B.P.C.*)

Pulv. scammonii . .	℥j.
Hydrarg. subchlorid. .	℥j.
Antimonii oxidi . .	℥j.
Pulv. potass. bitart. .	℥j.

Ext. Phar. and B.P.C. use antimonial powder, ginger, and jalap, equal parts, to replace antimony oxide in above, which is Gray's formula.

Pulvis Bismuthi Comp.

This is a common title for many articles, generally indigestion-powders. Mr. Martindale used the name for Ferrier's snuff. Several London hospitals have the title for powders containing 5 gr. each of bismuth carbonate, magnesium carbonate, and a few grains of acacia or pulv. trag. co. The following is the late Sir T. Grainger Stewart's prescription:—

Bismuthi subnit. . .	℥xij.
Sodii bicarbonat. . .	℥vj.
Pulv. rhei . . .	℥ij.
Pulv. cinnamomi co. .	ʒj.

Mix and sift three times.

Dose: 10 gr. to 30 gr. in water an hour after food.

Blood-purifying Powder

Dried Glauber's salt .	ʒj.
Dried Epsom salts . .	℥vij.
Common salt . . .	ʒiss.
Tartaric acid . . .	℥iss.
Bicarbonate of sodium .	ʒij.

To be well mixed.

Dose: ʒj. in a glass of water every morning.

Burn-powder

Zinci oxidi . . .	ʒj.
Mag. carb. levis . .	℥j.
Pulv. acid. boric. . .	ʒj.

Mix and sift.

Directions: To be dusted freely on the affected part.

Pulv. Calumbæ Co.

(St. George's Hosp.)

Bismuthi subnit.	ʒiij.
Sodii bicarbonat.	ʒiij.
Pulv. acaciæ	ʒiij.
Pulv. rhei	ʒiss.
Pulv. calumbæ	ʒiss.
Pulv. cinnamom.	ʒiss.
Pulv. zingiberis	ʒiss.

Dose: Gr. xv. to gr. xxx.

NOTE.—This powder is sometimes wanted, but it should be noted that the Scotch pulv. calum. co. consists of 3 parts each calumba and rhubarb, and 10 parts of sodium bicarbonate.

Cancer-powder

(Esmarch's Painless)

Hydrarg. subchlorid.	℈iv.
Acidi arseniosi	gr. x.
Morphin. hydrochlor.	gr. x.
Pulv. acaciæ	ʒj.

Pulv. Caseini Solubilis

(syn. *Sodium Caseinate*)

Commercial caseine	ʒviiiss.
Sodium bicarbonate	ʒiss.
Distilled water	ʒij.

Mix together in a large mortar, and, when effervescence ceases, dry the magma, and powder.

Pulv. Caseini Saccharatus

Pulv. caseini sol.	ʒj.
Pulv. sacch. alb.	ʒj.

From 1 to 2 dr. of either of these powders to emulsify 1 oz. of a fixed oil. Rub the powder smooth with water, and add the oil gradually.

Children's Powders

I. (Plain)

Hydrarg. subchlor.	ʒj.
Pulv. sacch. alb.	ʒv.

II. (Pink)

Pulv. antimonialis	ʒij.
Hydrargyri subchloridi	ʒij.
Pulv. sacchari albi	ʒvj.
Carmini	gr. j.

Triturate the carmine with the calomel, then gradually work in the sugar.

III. (Cooling or Fever)

Potass. chlorat.	ʒj.
Pulv. glycyrrhiz.	ʒj.
Pulv. sacchari albi	ʒiv.

Mix by sifting.

IV. (Worm)

Santonin.	ʒj.
Hydrarg. subchlor.	ʒj.
Pulv. sacch. alb.	ʒiv.

The following are the doses of each of the above powders:—

Two to four months	gr. iss.
Four to six months	gr. iij.
Six to ten months	gr. ivss.
Ten months and upwards	gr. vj.

It is advisable to put them up in 3-gr. or 6-gr. powders. The worm-powders should not be given to children under nine months.

Children's Aperient-powder

Leptandrin	gr. iij.
Sugar of milk	gr. xij.
Compound jalap-powder	gr. xxx.

Mix and make into twelve powders. One is a dose for five years.

Pulv. Potass Chloratis Co.

(Cent. Thr. Hosp.)

Borax, sodium bicarbonate, and potassium chlorate, of each ʒss., sugar ʒj.

The B.P.C. powder ('*Gargasal*') is potass. chlorat., boracis aa. ʒj., sodii chlorid. ʒij., sodii bicarb. ʒiv. A teaspoonful to a small tumblerful of warm water to make a gargle.

Composition-powder

(syn. *Pulv. Myricæ Co., N.F.*)

Powdered bayberry root-bark	ʒxij.
Powdered ginger	ʒvj.
Powdered capsicum	ʒj.
Powdered cloves	ʒj.

Mix.

Sometimes 6 oz. of powdered

pinus canadensis is added to the above, and, indeed, many formulas have been published for it, but the above one is generally followed. The N.F. name is unfortunate, because the eclectics have a pulv. myricæ co. of older date, which consists of equal parts of powdered bayberry-bark and blood-root. It is used as a cephalic snuff.

Cooling-powder

Hydrargyri subchloridi .	ʒj.
Pulv. sacchari albi . .	ʒv.

Dose: One to six grains or more, according to the age of the child.

Tasteless Cooling and Teething Powders

P.F. 13

Pulv. ipecac. . . .	ʒss.
Hydrarg. subchlor. . .	ʒj.
Ext. gelsemii liq. . .	ʒj.
Pulv. sacch. alb. . .	ʒvij.

Dose: One to eight grains, according to the age of the child.

Corrasa Compound

For this advertised remedy the advertiser gave his clients the following prescription:—

Ext. corrasa apimis .	ʒviij.
Ext. selarmo umbelifera .	ʒiv.
Powdered alkermes latifolia	ʒiij.
Ext. carsadoc herbalis .	ʒvj.

Dr. A. B. Lyons analysed the compound, as procured from Rev. Joseph T. Inman, New York, and found the constituents to be substantially as follows:—

Powdered gentian, about	15	parts
Powdered liquorice ,,	15	parts
Powdered sugar ,,	50	parts
Sodium bicarbonate ,,	17·5	parts
Powdered cochineal ,,	2·5	parts

Mr. R. A. Cripps found in Corrasa Compound sold in England potassium bromide 56·5, sodium bicarbonate 38·5, and powdered cinchona 4. See *C. & D.*, 1906, II., 492.

Children's Diarrhœa-powders

P.F. 1

Bismuth. carb. gr. v.-gr. x. pro dose.

P.F. 2

Pulv. cretæ arom. gr. v.-gr. x. pro dose.

P.F. 3

Hydrarg. c. cretâ gr. ij.-gr. v. pro dose.

Pulvis Emeticus

Equal parts of sulphate of zinc and powdered ipecacuanha.

Dose for an adult: ℈ij. in warm water.

Tasteless Fever-powder

Calomelanos . . .	ʒss.
Pulv. sodæ tartaratæ .	ʒiss.
Carmini	q.s.

Dose: One to four grains, according to the age of the child.

Fever and Cooling Powders

Potass. nitrat. . . .	ʒj.
Pulv. sacch. lact. . .	ʒij.
Pulv. curcumæ . .	gr. ij.

For over two years give 3 grains.

Powders for Gleet

Pulv. cubebæ . . .	ʒss.
Pulv. acaciæ . . .	gr. xv.
Pulv. potassii nitrat. .	gr. x.

M. Fiat pulvis.

A powder to be taken twice a day in water.

Powder for Gout

Pulv. colchici sem. . .	℈j.
Magnes. sulph. exsicc. .	ʒvj.

Dose: A teaspoonful in half a tumblerful of water early in the morning.

Pulvis Hæmorrhoidalis
(Dr. Prothero Smith's)

Sulphur. præcip.	lb. ij.
Pulv. guaiaci	ʒiv.
Magnes. carb. pond.	ʒiv.

Dose: A teaspoonful in a wineglassful of water at night occasionally.

(Posner)

Pulv. jalapæ	ʒx.
Pulv. rhei	ʒv.
Æleosaccharin. anisi	ʒv.
Potassii bitartrat.	ʒxx.
Sulphuris	ʒxx.

Misce bene.

D.A.V.

Powdered senna-leaves	ʒj.
Calcined magnesia	ʒj.
Powdered sugar	ʒj.
Purified sulphur	ʒj.
Cream of tartar	ʒj.

Mix

Headache-powders
P.F. 26

Acetanilidi gr. iv. cum carmin. q.s.

P.F. 27

Caffein. citratis	gr. ij.
Acetanilidi	gr. vj.

Misce pro dose.

P.F. 28

Acetanilidi	ʒvij.
Sodii bicarb.	ʒj.
Acid. tartaric.	ʒj.
Caffeinæ	ʒj.

Misce et div. in pulv. gr. viij. sing.

Headache and Tic Powder

Acetanilidi, Antipyrin.	aa. gr. v.
Caffeinæ citratis	gr. ij.

Misce pro dose.

Headache and Neuralgia Powder
P.F. 21

Pulv. sacchari alb.	gr. iij.
Acetanilidi	gr. iij.

Misce pro dose.

Influenza-powder
P.F. 2

Pulv. potassii nitratis	gr. x.
Pulv. sacchari lactis	gr. x.
Pulv. cocci cacti	q.s.

Misce pro dose.

Pulv. Iodoformi Co., N.F.
(syn. *Naphthalin Iodoform.*)

Iodoform	ʒiv.
Naphthalin	ʒx.
Boric acid	ʒvj.
Oil of bergamot	ʒss.

Triturate the oil of bergamot with the boric acid, add the other ingredients, and triturate until homogeneous.

In this dusting-powder the odour of iodoform is well masked.

Pulv. Lobeliæ Co.
(Eclectic Emetic-powder)

Powdered lobelia	ʒvj.
Powdered blood-root	ʒiij.
Powdered skunk-cabbage	ʒiij.
Powdered ipecacuanha	ʒiv.
Powdered capsicum	ʒj.

Dose: ʒij. One-fourth of the dose to be given every fifteen minutes in an infusion of boneset (*Eupatorium perfoliatum*). *See* notes on pp. 753-4.

Pulv. Mentholis Co. Alb., D.A.V.
(*Weisses Mentholschnupfpulver*)

Menthol	2 grams
Sodium sozoiodolate	2 grams
Powdered boric acid	48 grams
Powdered milk sugar	48 grams

Pulv. pro Mist. Cretæ

Prepared chalk	℈iiss.
Powdered tragacanth	gr. vij.
Powdered sugar	℈v.

Use 54 grains to each ounce of cinnamon-water.

The C.F. formula is the same as P.F., but 40 grains to aq. cinnam. ʒj. is there prescribed.

Pulv. Morphinæ Co., U.S.P.
(syn. *Tulley's Powder*)

Morphine sulphate .	1·5 gram
Camphor . .	32 grams
Powdered liquorice .	33 ,,
Precipitated chalk .	33·5 ,,

Rub down the camphor with a little rectified spirit, mix with the liquorice and chalk, add the morphine sulphate, and triturate until thoroughly mixed.

Dose: Half a gram, or 7½ grains.

Neuralgic Powders

Ferri peroxid. . .	gr. viij.
Cinchonid. sulph. . .	gr. ij.
Pulv. zingib. . . .	gr. iv.
Pulv. glycyrrhiz. . .	gr. iv.

This for a dose; to be repeated every four hours.

P.F. 16

Quinin. sulph. .	ʒss.
Phenacetin. . . .	ʒiij.
Ferri sesquioxid. . .	gr. x.

Dose: Up to 8 grains.

Neuralgia and Headache Powders

P.F. 3

Quinin. sulphatis . .	gr. j.
Ammon. bromidi . .	gr. x.
Magnes. carbonatis .	ʒss.
Coloris	q.s.

P.F. 4

Phenazoni,	
Phenacetini . .	aa. ʒv.
Caffeinæ . . .	ʒij.
Quinin. sulph. . .	ʒj.

Dose: 6½ to 13 grains in powder or cachet.

Opening, Cooling, and Soothing Powder
(For Babies)

Pulv. rhei co. gr. ij.-gr. v.

Pulv. Pancreaticus Co., N.F.
(syn. *Peptonising-powder*)

Pancreatin . . .	gr. v.
Bicarbonate of sodium .	℈j.

Mix. For one powder.

One powder is sufficient to peptonise 16 oz. of fresh cow's-milk, by proceeding in the following manner:—Add the compound pancreatic powder to 4 oz. of tepid water, contained in a suitable flask, and afterwards add 16 oz. of fresh cow's-milk, previously heated to 38° C. (100° F.). Maintain the mixture at this temperature during ten to fifteen minutes for partial peptonisation, or for twenty to thirty minutes for complete peptonisation, then boil for three minutes and transfer the flask to a cold place.

B.P.C. is the same, but the English pint (℥xx.) of milk is used.

Pulv. pro Lacte Humanisato, N.F., is a mixture of above 35 and milk sugar 965. To make *Humanised Milk*, mix above powder ℈v., water ℥ij., add fresh milk ℥ij., fresh cream ℥ss. Put into a clean bottle, and proceed as for peptonised milk.

Pulv. Pepsini Aromaticus, B.P.C.
(syn. *Pulvis Digestivus*)

Pepsin	ʒvj.
Pulv. aromat. co. . .	ʒiiss.
Magnes. carb. pond. .	℥iij.
Sodii bicarb. . . .	ʒvj. ʒij.

M.

Pulvis Pepsini Comp., N.F.
(syn. *Pulvis Digestivus*)

Saccharated pepsin .	225 gr.
Pancreatin . .	225 gr.
Diastase . .	15 gr.
Lactic acid (75-per-cent.)	15 min.
Hydrochloric acid .	30 min.
Sugar of milk . .	2 tr. oz.

Add the acids gradually to the sugar of milk, and triturate until they are thoroughly mixed. Mix the pepsin, pancreatin, and diastase, then incorporate this mixture, by trituration, with the sugar of milk, and sift.

B.P.C. also gives this without the synonym.

Pistoia Gout-powder

(*Polveri antigottose a base di ligni indianie genziana*, as sold by a Benedictine Monastery in Italy)

Powdered bryonia-root .	ʒiiss.
Powdered gentian . .	ʒiiss.
Powdered chamomile .	ʒiiss.
Powdered colchicum-root	ʒv.
Powdered betony . .	ʒx.

Mix and divide into 365 powders.

Dose: One powder is taken each day of the year in a full glass of hot or cold water.

The above formula has been confirmed by MM. Guignard, Collin, Chastaing, and Barillot, but Professor H. Thoms, of Berlin, examined the gout-powders in 1904, and found in them only powdered calumba and patchouli. The gall-stone remedy sold by the Monastery was found by Professor Thoms to be a mixture of 50 grams of sesame oil with 120 grams of an extractive solution containing magnesium sulphate 10 grams and citric acid 1 gram.

Potter's Powder

Camphor . . .	ʒj.
Ammonium carbonate .	℈iv.
Prepared chalk . .	ʒiv.

Rheumatic Powder

Sulphur. gr. xx. ter in die.

Pulv. Rhei cum Sodâ

(Phar. Aberd. Inf.)

Pulv. rhei . . .	ʒj.
Pulv. sodii bicarb. . .	ʒij.
Pulv. cinchon. flav .	ʒiss.
Pulv. zingib. . .	℥ss.

Dose: Gr. x. to gr. xx.

B.P.C. is p. rhei 1, sodii bicarb. 2.

Soothing and Teething Powders

P.F. 2

Hydrarg. c. cretâ . .	gr. ij.
Pulv. jalapæ . . .	gr. j.
Pulv. rhei super. . .	gr. j.

Misce pro dose.

Pulv. Talci Boricus, B.P.C.

Powdered boric acid, powdered starch, of each .	1 oz. 262½ gr.
Oil of geranium .	16 minims
Purified talc to .	16 oz.

Pulv. Talci Salicylicus, N.F.

(syn. *Pulv. Acidi Salicylici Co., B.P.C.; Foot-powder*)

Salicylic acid . . .	3 parts
Boric acid . . .	10 ,,
French chalk . . .	87 ,,

Mix them intimately.

Teething-powders

P.F. 25

Hydrarg. c. cretâ . .	1 gram.
Sodii bicarb. . . .	1 gram.

Dose: One to five grains.

P.F. 26

Hydrarg. c. cretâ . .	16 gram.
Magnes. calcin. . .	2 gram.
Sacch. anisi . . .	14 gram.

Dose: One to five grains.

P.F. 27

Potass. chlorat., Potass. nitrat. pur. .	aa. gr. j.
Pulv. glycyrrh. decort. .	gr. ij.

Misce pro dose.

Teething and Cooling Powders

P.F. 23

Hydrarg. subchl. . .	ʒij.
Pulv. sacch. lact. . .	ʒv.

Three grains in each powder. To be given according to directions.

P.F. 24

Hydrarg. c. cretâ . .	ʒj.
Magnes. carb. . .	ʒiij.
Carmini	q.s.

Four grains for a one-year-old child.

Teething and Soothing Powder

Hydrarg. subchlor. . .	℥ss.
Pulv. sodæ tartaratæ .	ʒiss.
Pulv. ipecac. . . .	gr. v.

Dose: One to four grains.

Teething, Soothing, and Cooling Powders

I

Hydrarg. c. cretâ	ʒij.
Sodii bicarb.	ʒj.
Magnes. carb.	ʒj.

Dose for one year, 4 grains.

II

Potass. bromidi	gr. j.
Pulv. sacch. lactis	gr. ij.
Pulv. glycyrrh.	gr. j.
Tr. podophylli	gtt. j.

Misce pro dose.

NOTE.—Phenacetin is a useful addition to such powders, a quarter to one grain (according to age) having a remarkably soothing effect.

Tic and Neuralgia Powders

P.F. 49

Phenacetin	ʒij.
Ferri redact.	ʒj.

(*See also* Pulv. Acetanilid. Co.)

Tyson's Antimonial Powder

Antimonii oxidi	℈j.
Calcii phosphatis	ʒiij.

(Also made with equal parts of calcium phosphate and potassium sulphate in place of the phosphate.)

Dose: Gr. v. to gr. x.

Pulvis Ventriculus Callosus Gallinaceus

(Powder of Chicken Gizzards)

As soon as the chicken is killed, the gizzard is removed, cut open, and the lining peeled off, washed, and dried. In a warm place it will dry thoroughly in one hour, when it is ready to powder. It is said to be superior to pepsin (Kirchgessner).

Pulvis Violaris, B.P.C.

This is Violet Powder I., p. 16, but 1 of orris to 7 of starch.

Worm-powders

P.F. 34

Pulv. resin. scamm.	ʒij.
Pulv. sacch. lact.	ʒj.
Hydrarg. subchlor.	ʒj.
Santonini	ʒj.

Dose: Three to six grains.

P.F. 35

Calomelanos	gr. j.
Pulv. scammon. co.	gr. iij.
Santonini	gr. j.

Misce pro dose.

P.F. 36

Calomelanos	gr. j.
Santonini	gr. j.
Pulv. jalapæ	gr. iij.

Misce pro dose.

Saccharum Croci

Saffron	ʒj.
Sugar in coarse powder	ʒxvj.
Boiling water	a sufficiency

Exhaust the saffron with as little water as possible by repeated infusion. Evaporate the liquors to a syrupy consistency; mix thoroughly with the sugar, dry, powder, and preserve in a bottle kept in a dark place.

NOTE. — This is for making syr. croci extemporaneously. Mr. George Barber says it keeps for years without deterioration. The formula for the syrup is:—Sacch. croci ʒij., aq. ʒij. Solve et adde syrupum ad ℥j. M.

Sal Harrogas

(*Sal Aperiens*, B.P.C. *See* p. 648)

Sales Minerales

Following are formulas for a few artificial salts, representing the more important mineral waters. The quantities in each case should be added to 2 pints (40 oz.) of soft spring-water or distilled water.

Friedrichshall

Dried Epsom salts	℥ss.
Sodium chloride	ʒiij.
Dried Glauber's salt	ʒj.
Sodium bicarbonate	gr. xv.
Calcium sulphate	gr. x.
Sodium bromide	gr. ij.
Potassium sulphate	gr. iv.

Powder and mix.

Hunyadi

Dried Glauber's salt	ʒv.
Sodium bicarbonate	ʒiss.
Dried Epsom salts	℈ij.
Sodium chloride	gr. xxij.
Calcium sulphate	gr. viij.
Potassium sulphate	gr. j.
Ferrous sulphate	gr. ss.

Powder and mix.

Carlsbad

Dried Glauber's salt	℈ij.
Sodium bicarbonate	ʒss.
Sodium chloride	gr. xv.
Potassium sulphate	gr. ij.

Powder and mix.

Vichy

Sodium bicarbonate	℈v.
Sodium chloride	gr. iv.
Potassium sulphate	gr. iij.
Calcium sulphate	gr. iiss.
Dried Epsom salts	gr. j.

Powder and mix.

If crystals are desired, dissolve the powders in a sufficiency of boiling water, filter, and crystallise. Again saturate the mother liquor with the powder by boiling, and crystallise.

Sal Carolinum Factitium, C.F. and N.F.

Dried sodium sulphate	44 parts
Potassium sulphate	2 parts
Sodium chloride, purified	18 parts
Sodium bicarbonate	36 parts

Triturate the ingredients, previously well dried, to a fine uniform powder.

Fifty-three grains to a pint of water is similar to Carlsbad water.

Sal Kissingense Factitium, N.F.

Potassium chloride	17 parts
Sodium chloride	357 parts
Magnesium sulphate, anhydrous	59 parts
Sodium bicarbonate	107 parts

Dry the ingredients and triturate to a uniform powder.

'A solution of 24 grains of this preparation in 6 oz. of water represents an equal volume of Kissingen water (Rakoczi spring) in its essential constituents.'

Sal Pepticum

Pepsin in powder	ʒj.
Cerebos salt	ʒvij.

Mix, and sift three times.

Sal Pepsini, or *Digestive Salt*, B.P.C., is a mixture of pepsin 3 and dried sodium chloride 97.

NOTE.—Scale pepsin should not be used.

Sapo Durus

(Lothian's Method)

Olive oil	100 parts
Soda lye s.g. 1·33	50 parts
Alcohol (90-per-cent.)	30 parts

Heat on a steam-bath until saponification is complete; add 300 parts of hot distilled water, dissolve, and salt out by adding a filtered solution of sodium chloride 25, sodium carbonate 5, and water 80 parts.

N.B.—Much white Castile soap of commerce is a cocoa-nut oil soap instead of an olive oil one.

Iodine Soaps

(Great Northern Hospital)

I

Iodi resublimat. . .	℥ss.
Acidi oleici . . .	℥ss.
Alcohol. (90-per-cent.) .	℥iij.
Liq. ammon. fort. .	℥j.

M.S.A.

This makes a soapy paste soluble in all liquids except fixed oils.

II

Iodi resublimat. . .	℥j.
Acidi oleici . . .	℥ij.
Liq. ammon. fort. .	℥iij.
Ol. paraffin. alb. ad .	℥xx.

M.S.A.

This form has almost ousted alcoholic solutions of iodine at the hospital.

III

Iodi resublimat. . .	℥j.
Alcohol. (90-per-cent.) .	℥v.
Solve et adde	
Sol. ammonii oleatis .	℥j.
Glycerinum ad . .	℥xx.

M.

This is the best preparation of all. These are rational representations of the so-called *Iodine Oils*.

Sapo Mollis

(Lothian's Process)

Olive oil . .	100 parts
Potassium hydroxide	21 parts
Water . . .	100 parts
Alcohol (90-per-cent.)	20 parts

Heat on a steam-bath until the oil is saponified, adding a little more alcohol if necessary to assist the saponification.

(Wilbert's)

Cottonseed oil . .	200
Potassium hydrate . .	45
Alcohol	35
Water (distilled or rain) .	225

Dissolve the potassium hydrate in 100 c.c. of the water, add the alcohol, then gradually add the cottonseed oil, constantly stirring, until a creamy emulsion has been formed. Allow this mixture to stand for from six to eight hours, or until it has become quite transparent, then incorporate the remaining portion of the water.

Product light-yellow. To obtain a light-green soap, replace the alcohol with green tincture of hemp-seed.

(U.S.P.; *Sapo Kalinus, Ph.G.*)

Heat linseed oil 40 grams to 158° F. on a water-bath, add a solution of caustic potash 95 grams in 450 c.c. of water (158° F.), mix, then add alcohol 40 c.c., and continue heating (without stirring) until the mixture dissolves in water without separation of oily drops.

Sapo Unguinosus Mercurialis

Mercury . . .	℥x.
Mercurial ointment . .	℥ij.
Salve soap . . .	℥xx.

Rub the mercury with the mercurial ointment (as in making the latter) and mix with the salve soap.

This is a great improvement upon the old 'Sapo mercurialis.'

Sapo Unguinosus (Unna)

(syn. *Salve-soap; Mollin*)

According to the D.A.V. 'Ergänzungsbuch,' this is made by saponifying 40 parts of lard with potash (50 parts of a solution of sp. gr. 1·130 evaporated to 40 parts) and 4 parts of rectified spirit by mixing and allowing to stand for twelve hours at 50° to 60° C., then adding 15 parts of glycerine to the soft soap formed. Both liquids and solids to be taken by weight. It contains 12 per cent. of free fat. The following are the more common

combinations, the percentages representing the quantities of the medicaments in 100 parts :—

	Per cent.
Ammonium sulphydrate	5
Camphor	5
Creolin	10
Creosote	10
Ichthyol (ammonia)	5 to 50
Iodoform	10
Iodol	10
Lanoline	20
Naphthol	1
Oil of cade 20, and ichthyol	10
Oleum rusci	10
Peruvian balsam	10
Potassium iodide	5 and 10
(Dissolve in as much water.)	
Precipitated sulphur	10
Thymol	10
Zinc oxide	10

Saponimenta, or Opodeldocs

Medicated opodeldocs are in demand on the Continent chiefly. They are made from cocoanut oil or Castile soap, or both, by dissolving the shredded soap in six times its weight of rectified spirit and adding a solution of the medicament. The following examples by Dieterich will show the nature of the preparations and the manner of working. The ingredients are to be taken by weight :—

Arnica Opodeldoc

Cocoanut oil soap	ʒv.
Olive oil soap	ʒj.
Rectified spirit	ʒxvij.

Dissolve by digesting at a gentle heat, then add

Tincture of arnica	ʒiiss.
Spirit of arnica (1 oil in 50)	gtt. ij.

Filter, and wash the filter with water to make the product weigh ʒxxv.

Lin. Arnicæ, B.P.C., is more like this than the formula on p. 663. It contains hard soap 20, alcohol 50, arnica tincture 25, and camphor 5.

Chloroform Opodeldoc

Cocoanut oil soap	ʒx.
Olive oil soap	ʒv.
Rectified spirit	ʒvj.

Dissolve as above, and add

Distilled water	ʒix.

Filter, and add

Chloroform	ʒiij. ʒvj.
Oil of lavender	♏xij.
Rectified spirit	ʒxiiss.

Mix.

Tar Opodeldoc

Cocoanut oil soap	ʒvj.
Olive oil soap	ʒiv.
Caustic soda	ʒss.
Rectified spirit	ʒx.

Digest until the soap is dissolved, then add

Wood tar	ʒx.
Oil of lavender	ʒss.

Continue the digestion for fifteen minutes, filter, and wash the filter with rectified spirit to 12½ oz. by weight.

Solutio Solventis Mineralis

(syn. *Liq. Arsenici Chloridi, P.L.; De Valangin's Solution*)

Arsenious acid	ʒss.
Hydrochloric acid	ʒiss.
Distilled water	ʒxx.

Dissolve.

Dose : Three minims, gradually increased to 10 minims, thrice daily.

Prescribed by Dr. John L. Milton.

SPIRITUS—SPIRITS

Spiritus Ætheris Chloratus

(syn. *Spt. Æth. Mur.; Spt. Salis Dulcis; Spirit of Hydrochloric Ether; Dulcified Spirit of Salt*)

The old Edinburgh Pharmacopœias directed this spirit to be made by digesting together for two days 1 volume of muriatic acid and 3 volumes of rectified spirit, then distilling as long as the distillate does not effervesce with sodium bicarbonate.

Spt. Ætheris Chlorati, D.A.V., is made by mixing acid 25 and 90-per-cent. alcohol 100 (both by weight). After twenty-four hours distil by a sand-bath 105. If acid, neutralise by shaking with dried sodium carbonate, and distil by a water-bath 100 by weight.

Dose: A teaspoonful.

Clutton's Febrifuge Spirit is made by acting upon sulphuric ether with hydrochloric acid, or upon rectified spirit 1 gal. with sulphuric acid 38 oz. (by weight) and hydrochloric acid 16 oz. (by weight), and distilling.

Spt. Ætheris Co.

(syn. *Hoffmann's Anodyne*)

Ol. vini	ʒiij.
Ætheris	ʒviij.
Spt. rectificati	ʒxvj.

Spiritus Ætheris Nitrici, P.L.

(syn. *Sweet Spirit of Nitre*)

Add 4 oz. of nitric acid gradually to 3 lbs. of rectified spirit, and distil 32 oz.

Sweet-Spirit-of-Nitre Substitute

Sodium nitrite	ʒij.
Old sweet spirit of nitre	ʒij.
Glycerine	ʒij.
Water	ʒxvj.

Mix and dissolve.

Dose: The same as spt. æther. nitrosi.

Spiritus Ammoniæ Anisatus

(*See* Liq. Ammon. Anisat.)

Spiritus Ammoniæ Aromaticus

(Prepared without distillation)

Carbonate of ammonium	ʒss.
Strong solution of ammonia	ʒj.
Volatile oil of nutmeg	♏xxxiv.
Oil of lemon	♏xlix.
Rectified spirit	ʒxv.
Water	ʒiiiss.

Dissolve the oils in the rectified spirit. Reduce the carbonate of ammonium to small fragments, place it in a well-stoppered 10-oz. bottle, add the water and strong solution of ammonia, and shake occasionally till the carbonate is dissolved. Filter if necessary, pour into the aromatised spirit gradually, and with constant stirring, and add sufficient distilled water to make the product measure 20 oz.

Terpeneless oil of lemon ♏iv. may be used instead of the natural oil; the resulting spirit keeps the colour better.

Spiritus Ammoniæ Dzondii

An alcoholic solution of ammonia containing about 10 per cent. of anhydrous ammonia.

Spt. Amygdalæ Amaræ, C.F.

Oil of bitter almond	♏lxx.
Alcohol (95-per-cent.)	ʒxvj.

Dissolve and add

Distilled water to	ʒxx.

Spiritus Aromaticus, N.F.

Compound spirit of orange	ʒj.
Rectified spirit	ʒxv.

Mix.

Should be kept in full bottles in a dark place.

Spiritus Aurantii, C.F.

Fresh oil of sweet-orange peel	ʒj.
Deodorised alcohol	ʒix.

Mix.

Spirit. Aurantii Comp., U.S.P.

Oil of sweet-orange peel	200 c.c.
Oil of lemon	50 c.c.
Oil of coriander	20 c.c.
Oil of anise	5 c.c.
Alcohol (90-per-cent.) to	1,000 c.c.

C.F. is the same with deodorised alcohol.

Spiritus Camphoræ (Rubini)

Camphor-flowers	ʒiv.
Rectified spirit	ʒv.

Dissolve.

Dose: 2 to 5 drops on lump-sugar. Should be given with caution.

Ess. Camphoræ, B.P.C., is camphor 4 and alcohol to 10, which is weaker than the accepted formula. The above provides a saturated solution (1 in 2). Equal parts by weight of absolute alcohol and camphor give the same result, 4 by weight of absolute alcohol being 5 by measure.

Spiritus Capillaris (Unna)

(*Spiritus Resorcini, B.P.C.*)

Resorcin	ʒj.
Castor oil	ʒss.
Eau de Cologne	ʒiss.
Rectified spirit to	ʒvj.

Dissolve the resorcin in 4 oz. of spirit, add the oil and eau de Cologne, and make up.

B.P.C. quantities differ slightly. Castor oil = ʒj.

Spt. Cardamomi Comp., N.F.

(*Colourless Tr. Card. Co.*)

Oil of cardamoms	ʒss.
Oil of caraway	ɱxj.
Oil of cinnamon cassia	ɱvij.
Alcohol (95-per-cent.)	ʒxvj.
Glycerine	ʒij.
Distilled water to	ʒxxxij.

Mix in the above order.

Spt. Formicarum, P.G.

Formic acid (25-per-cent.)	ʒiv.
Alcohol (90-per-cent.)	ʒvij.
Distilled water	ʒiiss.

All by weight.

Dose: 5 to 15 drops thrice daily.

Spt. Formicarum Co.

(syn. *Eau de Magnanimité*)

Oil of cassia	gtt. xv.
Oils of cloves, cubebs, and cardamoms, of each	gtt. vj.
Spirit of ants	ʒv.

Deterich gives lavender oil and turpentine oil of each 1 part, and spirit of ants 98 parts (all by weight).

Spiritus Limonis. U.S.P., 1890

('*Essence of Lemon*,' *N.F.*)

Oil of lemon	ʒxiiss.
Lemon-peel, freshly grated	ʒxiiss.
Deodorised alcohol to	ʒxxxij.

Dissolve the oil in 30 oz. of spirit, add the lemon-peel, macerate for twenty-four hours, filter, and wash the filter with spirit to make 32 oz. of finished product.

Spiritus Melissæ

Oil of melissa	ɱv.
Oil of lemon	ɱxx.
Rectified spirit	ʒv.

Spt. Olei Volatilis

The 'National Formulary' orders spirit of any essential oil to be made by dissolving 1 part of the oil in 15 parts of deodorised alcohol, both by volume. It will be noted that the B.P. spirits of the same nature are 1 in 10.

Spiritus Ophthalmicus

I. Nat. Form.

Oil of lavender	ʒss.
Oil of rosemary	ʒiss.
Alcohol (95-per-cent.)	ʒxxiij.

Mix.

II. Dr. Pagenstecher's

Spirit of melissa	ʒvj.
Spirit of lavender	ʒiss.
Spirit of camphor	ʒiss.
Sweet spirit of nitre, P.L.	ʒj.

Mix.

Directions: Apply to the eyes six or eight times a day.

Spiritus Phosphori, U.S.P. 1890

Phosphorus . . .	gr. ix.
Absolute alcohol . .	℥xvj.

Boil in a flask fitted with a reflux condenser until the phosphorus is dissolved, and when cold make up to 16 oz. with absolute alcohol.

℥j. = gr. $\frac{1}{12}$.

The 'National Formulary' gives phosphorus 20$\frac{1}{2}$ gr. to 32 oz. *Compare with* Liquor Phosphori, p. 681.

Spiritus Rusci

Birch tar oil and 90-per-cent. alcohol, equal parts by weight.

Spiritus russicus, D.A.V.
(*Russian Spirit*)

Mix together 5 parts of powdered mustard and 10 parts of water, then add 2 parts each (all by weight) of powdered capsicum, camphor, and sodium chloride, 5 parts of ammonia solution, and 80 parts of 90-per-cent. alcohol; macerate eight days, filter, and in the filtrate dissolve 3 parts each of ether and oil of turpentine.

Spiritus Saponatus Kalinus
(Hebra's Potash-soap Spirit)

Linseed oil . .	℥iiiss.
Rectified spirit . .	℥iij. ℥vj.
Caustic potash. . .	℥v.
Distilled water . .	℥v.

Dissolve the potash in the water and add to the spirit and oil contained in a pint flask. Shake until clear; then add the following mixture gradually:—

Spirit of lavender . .	℥viiiss.
Rectified spirit . .	℥v.
Distilled water . .	℥iij.

Filter.

Unna's Soap Spirit is of similar composition. *Spt. Saponatus*, N.F., is Castile soap ℥vss., alcohol ℥xix., water to ℥xxxij. *Spt. Saponatus*, B.P.C., is B.P. soft soap 65 and alcohol to 100. The same, with the addition of ol. lavand. 3, is *Spt. Saponis Kalini*, B.P.C. The U.S.P. soft soap is a linseed-oil one, and its *Lin. Sapon. Mollis* is soft soap 65, oil of lavender 2, and alcohol to make 100.

Spiritus Saponis kalini, D.A.V.

A mixture of 10 parts each (by weight) of potash linseed-oil soap and 90-per-cent. alcohol.

STEATINA—STEATINS

Salve Mulls or Unguenta Extensa are preparations intermediate between ointments and plasters proposed by Mielcke, of Hamburg (Unna's late pharmaceutical associate), for dermatological practice. Benzoated mutton suet is the principal fat in them, and the finished steatins are spread upon muslin in the proportion of 100 grams (℥xxv.) to 1 metre by 20 cm. (39 inches by 8 inches). The following formulas are illustrative of the variation in proportion of fats:—

Steatinum Acidi Borici

Powdered boric acid .	℥j.
Benzoated lard . .	℥ij.
Benzoated mutton suet .	℥vij.

Melt the fats, triturate the acid in a warm mortar with some of the melted fats, transfer to the rest, and stir occasionally until cold.

Steatin. Diachylon.

Lead plaster . . .	℥v.
Benzoated mutton suet .	℥iij.
Benzoated lard . .	℥ij.

Melt together and stir occasionally until cold.

Steatin. Ichthyol.

Ammonium ichthyol .	℥j.
Benzoated lard . .	℥j.
Benzoated mutton suet .	℥viij.

Prepare in the same way as steat. ac. boric.

Steatin. Resorcin.

Resorcin . . .	℥j.
Benzoated lard . .	℥ij.
Benzoated mutton suet .	℥vij.

Prepare in the same way as steat. ac. boric.

The following are the recognised strengths of other steatins, with the proportions of benzoated suet (s.) and benzoated lard (l.) :—

Alumnol 10, s. 70, l. 20.
Bismuth nitrate 10, s. 70, l. 20.
Carbolic acid 10, s. 90.
Creolin 5, s. 90, l. 5.
Chrysarobin 10, s. 70, l. 20.
Creosote 20, salicylic acid 10, s. 65, yellow wax 5.
Dermatol 10, s. 70, l. 20.
Diachylon (balsamic) 50, s. 30, l. 10, Peru balsam 10.
Diachylon (boric) 50, s. 20, l. 20, boric acid 10.
Diachylon (carbolic) 50, s. 30, l. 10, phenol 10.
Diachylon (tar) 50, s. 30, l. 10, wood tar 10.
Iodoform 5, s. 85, l. 10.
Iodoform 10, s. 75, l. 15.
Iodol 10, s. 75, l. 15.
Lead carbonate 30, s. 50, l. 20.
Lead (red) 25, s. 64, l. 10, camphor 1.
Loretin 5, s. 85, l. 10.
Loretin 10, s. 75, l. 15.
Mercurial ointment 60, s. 40.
Mercurial ointment (carbolated) 60, s. 35, phenol 5.
Mercuric oxide (red) 10, s. 80, l. 10.
Potassium iodide 10, s. 70, l. 5, sodium hyposulphite 1, water 5, glycerine 9.
Salicylic acid 10, s. 80, l. 10.
Salicylic acid 20, s. 65, l. 15.
Soap (soft) 20, s. 80.
Sublimate (corrosive), 0·2, s. 90, l. 5, S.V.R. 5.
Sublimate (corrosive) 1, s. 85, l. 5, S.V.R. 9.
Tar (wood) 10, s. 85, wax 5.
Thiol (liquid) 10, s. 80, l. 10.
Thymol 5, s. 85, l. 10.
White precipitate 10, s. 70, l. 20.
Zinc oxide 10, s. 70, l. 20.
Zinc oxide (carbolated) 10, s. 70, l. 15, phenol 5.
Zinc oxide (ichthyolated) 10, s. 70, l. 10, ichthyol 10.
Zinc oxide (salicylated) 10, s. 70, l. 15, salicylic acid 5.

SUPPOSITORIA—SUPPOSITORIES

The following are the adult doses of the most commonly used medicaments required for each suppository with a cocoa-butter or glyco-gelatin basis. The usual size of suppositories is 15 gr.—*i.e.*, the moulds are made to hold about 15 gr. of cocoa-butter, so that in compounding the suppositories allowance is made for the medicament when it is bulky and exceeds 3 gr. in each suppository. Those marked * should only be prepared with cocoa-butter or other fat basis.

	Grains
Aloin	1
Atropine	$\frac{1}{20}$
Belladonna extract (leaf)	$\frac{1}{2}$ to 2
Belladonna and morphine hydrochloride	$\frac{1}{5}$ and $\frac{1}{4}$
Bismuth oxide	10
Bismuth oxychloride	10
Bismuth subnitrate	5
Borax	5
Boric acid	3
Carbolic acid	1
Chloral hydrate	5
Cocaine hydrochloride	$\frac{1}{4}$ to 1
Copper acetate	2
Copper sulphate	2
Elaterium	$\frac{1}{2}$
Ergotin	3
*Gall and opium	5 and 1
*Gallic acid	3
Gamboge	3
*Hamamelin	1 and 2
*Ditto with opium	$\frac{1}{4}$

	Grains
*Hamamelis extract	$\frac{1}{2}$ and 1
*Ichthyol (ammon.)	2
Iodoform	3
*Iron perchloride	2
Lead acetate and opium	3 and 1
Lead iodide	2
Opium	1
Podophyllin	1
*Red gum and nux vomica extract	5 and 1
*Rhatany ext. and morphine hydrochloride	8 and $\frac{1}{10}$
Santonin	3 to 6
Silver nitrate	1
*Tannic acid and belladonna extract	3 and 2
*Tannic acid and morphine hydrochloride	5 and $\frac{1}{4}$
*Tannic acid and opium	5 and 1
Zinc oleate	5
Zinc oxide	5
Zinc sulphate	2

Chloral hydrate suppositories should not be prepared by heat when made from cocoa-butter alone; simply beat up the ingredients in a mortar and press into the mould.

Extracts should be made soft with a drop of water, and some of the melted basis added, then incorporated with the rest by constant stirring.

Agar-agar Suppositories have not come into favour in English-speaking countries, but they are appreciated in Germany, where Lewin and Eschbaum recommend them to be made from a powder consisting of a mixture of agar-agar 1 oz. and sodium bicarbonate 5 gr. One grain of this powder is sufficient to make a 15-gr. or 30-gr. suppository with water, the quantity of agar-agar varying according to the nature of the medicament. The following are good examples :—

A

Potassium iodide	ʒss.
Agar-agar powder	ʒss.
Distilled water	ʒxv.

Shake together in a strong bottle, then heat the contents in a water-bath until dissolved, and divide into fifteen or thirty suppositories.

B

Iodoform	ʒiss.
Agar-agar powder	ʒss.
Distilled water	ʒxv.

Prepare in the same way as A, and divide into fifteen pessaries.

Glycerine suppositories with agar-agar are made by mixing 1 dr. of the powder with 5 dr. of water, then adding 25 fl. dr. of glycerine and heating the mixture on a water-bath until dissolved. Mould into suitable sized suppositories, which will contain 75 per cent. by weight, or 83 per cent. by volume, of glycerine. The bicarbonate of sodium is added to agar-agar on account of the slight acidity of the latter.

Suppositoria Carnis
(syn. *Nutrient Suppositories*)

I

Beef peptone in powder	ʒvj.
Cocoa-butter	ʒj.

Shred the cocoa-butter and melt it by the heat of a water-bath, triturate the peptone in a warm mortar with about half of the melted fat, return to the dish in portions, stirring all the time, and when the whole is thoroughly mixed pour into 1-dr. moulds (iced).

II

Basis gelatini	ʒj.
Pastæ peptonis bovillæ	ʒij.

Misce bene et fiant suppositoria.

Suppos. Nutrientia, B.P.C., resemble No. II., viz., beef peptone 75, gelatin 7½, and water 17½; while *Suppos. Peptoni* are like No. I., containing beef peptone in powder ʒij. and theobroma oil ʒiv. Each suppository is 15, 30, or 60 grains.

Gelatin Basis for Suppositories

Gelatini	ʒiv.
Aq. destill.	ʒvj.
Glycerini	ʒij.
Ol. limonis	ʒss.

Misce bene.

B.P. (Lothian's Modification)

Gelatin	ʒj.
Distilled water	ʒij.
Glycerine	ʒv.

Dissolve the gelatin in the water on a water-bath, warm the glycerine to the same temperature, add, and mix.

Suppositoria Glycerini, U.S.P.

Glycerine	30 grams
Monohydrated sodium carbonate	0·5 gram
Stearic acid	2 grams
Water	5 c.c.

Dissolve the carbonate in the water, add it to the glycerine in a dish on the water-bath; then the stearic acid, and heat until the carbon dioxide ceases to be evolved, and the liquid is clear. Pour into moulds for ten suppositories.

Suppos. hæmorrhoidalia, D.A.V.

Bismuth oxyiodide	1 gram
Basic bismuth gallate	1 gram
Zinc oxide	1 gram
Resorcin	0·1 gram
Peru balsam	0·5 gram
Oil of theobroma	26·4 grams

Make into suppositories weighing 3 grams.

Compound Morphia Suppository
(*Morphia, Cocaine, and Belladonna*)

Cocain. hydrochlor.	gr. ij
Morph. hydrochlor.	gr. vj.
Ext. belladon.	gr. ij.
Glycerini	q.s.
Ol. theobromatis	gr. xv. vel q.s.

Divide into twelve suppositories of 15 grains each

Dr. J. A. McGill's Orange-blossom Suppositories

Each suppository weighs 3½ grams, and contains boric acid and alum 42 per cent., opium 14 per cent., the res being a paraffin basis. This is from a Cape official analysis. *See C. & D.*, 1901, II., 755.

Suppositoria Suprarenalin., B.F.
(*Suppos. Adreninæ, B.P.C.*)

Suprarenalin	gr. ss.
Boric acid	gr. j.
Distilled water	♏xv.
Anhydrous lanoline	℈iiss.
Cocoa-butter	ʒvj. ℈ij.

Dissolve the suprarenalin and boric acid in the water; mix with the lanoline, add the melted cocoa-butter, and pour into 15-grain moulds when cooling.

Each suppository contains suprarenalin gr. $\frac{1}{60}$, or about ♏xvj. of 1-in-1,000 solution.

SYRUPI—SYRUPS

The decimal part of the number denoting specific gravity of simple syrup multiplied by 26 gives very nearly the number of pounds of sugar to the gallon. For example, 1·330 B.P.—0·33 × 26 = 8·580, or 8½ lbs. to gallon. The following figures show the product of certain weights of sugar and volumes of water:—

16 oz.	sugar to	12 oz.	water yield	22½	fl. oz., sp. gr.	1·273
16 oz.	,,	10 oz.	,,	20½	,,	1·298
16 oz.	,,	8 oz.	,,	18½	,,	1·330
14 oz.	,,	8 oz.	,,	17⅕	,,	1·311
12 oz.	,,	8 oz.	,,	16	,,	1·290
10 oz.	,,	8 oz.	,,	14⅕	,,	1·264
8 oz.	,,	8 oz.	,,	13¼	,,	1·231

The volume occupied by sugar in solution may be practically represented by 5 pints for 10 lbs. It is generally understood that syrups should not be poured hot into the stock-bottles and stoppered at once, because steam then rises, is condensed on the sides, trickles down, and forms a layer of water on the top. This, mixing by diffusion with the syrup, may form a weak saccharine solution on the surface, and thus favour fermentation.

It is as important in unofficial as in B.P. syrups to see that the product is exactly the same in volume and weight each time. If found not to be so, the quantity should be adjusted.

Syrupus Acaciæ, B.P.C.
(syn. *Syrupus Gummosus*)

Mucil. acaciæ	ʒiiss.
Syrupi	℥viiss.

Dose: ʒj. to ʒiv.

Syrupus Alkermis
(*Kermes Syrup*)

Syrup coloured with liq. cocci, or lemon syrup flavoured slightly with cinnamon and rose, and coloured with cochineal.

Syrupus Acidi Citrici, U.S.P.

Citric acid . .	10 grams
Distilled water . .	10 c.c.
Tincture of fresh lemon-peel . .	10 c.c.
Syrup to . . .	1,000 c.c.

Dissolve the citric acid in the water and mix with half the syrup, then add the spirit of lemon, and make up to the required volume.

The B.P.C. syrup is three times stronger, and omits the water.

Syrupus Acidi Hydriodici, B.P.C.

Potassium iodide . .	152 gr.
Potassium hypophosphite	12 gr.
Tartaric acid . . .	140 gr.
Water	200 min.
Proof spirit . .	a sufficiency
Syrup to	20 oz.

Dissolve the potassium salts in the water, and the tartaric acid in 5 dr. of proof spirit. Mix the two solutions in a phial and shake. Place it in ice-water for half an hour, shaking occasionally. Then filter, and wash the phial and filter with proof spirit until the filtrate ceases to give a cloudiness when dropped into nitrate-of-silver solution. Evaporate in a tared capsule over a water-bath to 600 gr., and mix with sufficient syrup to make 1 pint.

Dose : ♏xx. to ʒj. in water.

This syrup contains 1 per cent. of hydriodic acid. The formula is a modification of the U.S.P. one, which is also B.P.C., viz. : ac. hydriodic. dil. 1, aq. dest. 3, syrup. 6 (all by weight). The dilute acid is made in the above manner, viz. : (*a*) potassium iodide 135 grams, potassium hypophosphite 10 grams, water 250 c.c. ; (*b*) tartaric acid 136·5 grams, diluted alcohol 450 c.c. Mix *a* and *b*, ice, filter through cotton, wash with diluted alcohol to 1,000 grams. Heat to drive off alcohol, and make up to 1,000 grams.

Syrupus Allii, U.S.P. 1890

Garlic, sliced and bruised	ʒviij.
Dilute acetic acid . .	ʒxij.

Macerate four days, and press. To the marc add 8 oz. of dilute acetic acid, and again press. Filter the mixed liquors upon

Sugar	lb. ij.

Dissolve, and add dilute acetic acid to make 40 oz. of syrup.

Syrupus Althææ

Marshmallow-root, sliced	ʒviss.
Rectified spirit . .	ʒss.
Water	ʒvij.

Macerate two hours, strain, and in the liquor dissolve

Sugar	ʒxij.

Then mix with

Glycerine . . .	ʒxiv.
Distilled water to . .	ʒxvj.

B.P.C. is Squire's, viz. :— Althæa 3, water 40 ; macerate twelve hours, strain, press and filter 32 and dissolve 64 of sugar in it.

Syr. Anisi pro Infantibus

A Soothing-syrup

Ol. anisi	ʒss.
Ol. fœniculi . . .	♏v.
Ol. amygdal. essent. .	♏j.
Spt. rectificat. . .	ʒiv.
Aq. destillat. . . .	ʒij.
Syrupum ad . . .	ʒxvj.

Dissolve the oils in the spirit, add to the syrup and water mixed, allow to stand all night, and in the morning filter through a wetted filter sprinkled with fullers' earth, returning the filtrate until it goes through clear.

Dose : ʒss. to ʒj. in a tablespoonful of warm water, given in sips.

Syr. Anisi Simplex is made by infusing 1 oz. of bruised aniseed in 55 oz. of boiling water for two hours, filtering, and dissolving 66 oz. of sugar in the filtrate. Also made by dissolving ol. anisi ♏j. in syrup. ʒij.

Syrupus Apomorphinæ, B.P.C.

Apomorphine hydrochloride	gr. ivss.
Diluted hydrochloric acid	♏xxiv.
Rectified spirit	♏432
Distilled water	♏432
Syrup to	℥xx.

Mix the acid, spirit, and water, and dissolve the hydrochloride in the mixture; add the syrup, and mix.

Dose: ʒss. to ʒj.

Syr. Bals. peruviani, D.A.V.

Peruvian balsam	℥j.
Hot water	℥x.

Shake well, and repeat the shaking occasionally during twenty-four hours, and filter 8 oz. In which dissolve without heat

Sugar	℥xij.

Syr. Butyl-Chloral Hydratis, Br.P.C. and B.P.C.

Butyl-chloral hydrate	ʒv. ℈j.
Syrup	℥xx.

Heat the syrup, and dissolve the hydrate in it by shaking.

B.P.C. contains glycerine ℥iv. and rose-water ℥iv. in place of as much syrup.

Dose: ʒj. to ʒss.

Syr. Calcii Chlorhydrophosphatis

Precipitated phosphate of calcium	128 gr.
Hydrochloric acid, Water, each	a sufficient quantity
Spirit of lemon	140 min.
Syrup to	16 oz.

Triturate the phosphate of calcium with 1 oz. of water, and dissolve with the hydrochloric acid, avoiding an excess. Then add the spirit, filter, and wash the filter with a mixture of 1 oz. each of water and syrup. Lastly, add syrup to 16 oz.

Syrupus Calcii Hypophosphitis, Br.P.C and B.P.C.

Calcii hypophos.	℈viij.
Sacchar. alb.	℥xvj.
Acid. hypophos. (30 p.c.).	♏xvj.
Aq. destillat. ad	℥xx.

Dissolve the hypophosphite in 9 oz. of water, filter, and dissolve the sugar in the filtrate, heating slightly; strain, and when cold add the acid, and water to make 1 pint.

Dose: ʒj.-ʒiv. (= gr. j.-gr. iv.).

Syrupus Calcii Iodidi, N.F.

Iodine	560 gr.
Iron wire, fine, bright, and finely cut	200 gr.
Precipitated chalk	250 gr.
Distilled water	a sufficiency
Sugar	11 troy oz.
Syrup to	16 oz.

Mix the iron wire with 415 gr. of the iodine and 3 oz. of distilled water, and apply a gentle heat until the iodine is combined and the liquid has acquired a greenish colour. Filter through a small filter into a flask containing the remainder of the iodine, wash the filter with 1 oz. of distilled water, and heat the solution gently and carefully. Heat 4 oz. of distilled water in a capacious capsule to boiling, and add to it small alternate portions, first of the precipitated chalk, and then of the solution of iodide of iron, in small portions at a time, stirring briskly and waiting until the violence of the reaction moderates before adding a fresh portion. From time to time add a little distilled water to replace that lost by evaporation. When all the iron solution has been added, continue heating the mixture until it is quietly boiling, then filter it through a wetted filter, and wash the latter with enough distilled water to measure when cold 8 oz. In this dissolve the sugar by agitation, and make up with syrup to 16 oz. Strain if necessary.

Each fluid drachm contains about 5 gr. of iodide of calcium.

Syrupus Calcii Lactophosphatis

Chloride of calcium, B.P.	ʒj. ʒiij.
Phosphate of sodium .	ʒj. ʒvj.
Lactic acid, B.P. . .	ʒiiss.
Orange-flower water .	ʒv.
Water	q.s.
Syrup	q.s.

Dissolve the chloride and the phosphate, each separately in 2 pints of boiling water, mix the solutions, collect the precipitate, wash thoroughly, and press. Rub it up with the acid and the orange-flower water and when dissolved filter and add the solution to as much syrup as will make the whole measure 80 oz.

Dose: ʒj. to ʒij.

We retain this formula although a preparation is now in the B.P. made on similar lines to the U.S.P. syrup, which is prepared thus:—Dissolve 125 grams of precipitated chalk in 60 c.c. of lactic acid and 100 c.c. of water, add 36 c.c. of phosphoric acid, and 50 c.c. of water, and when the precipitate has dissolved add 100 c.c. of water; filter, to the filtrate add 50 c.c. of orange-flower water, and dissolve in it 725 grams of sugar. The product should measure 1,000 c.c.

Syr. Calcii Lactophos. c. Ferro, N.F. [B.P.C.]

Ferrous lactate . .	gr. LX.
Potassium citrate . .	gr. LX.
Water	ʒj.
Syrup of calcium lactophosphate (U.S.P.) to .	ʒxvj.

Dissolve the lactate of iron and citrate of potassium in the water with the aid of heat, and add the syrup to 16 oz.

May also be made by mixing equal parts of the two syrups. So also in the case of *Syr. Calcii et Sodii Hypophos.*

Sirup Calcii lactophos. c. Ferro et Mangano, D.A.V.

Calcium carbonate . .	10
Lactic acid . . .	24
Water	43
Phosphoric acid . .	22
Warm until dissolved and add	
Iron lactate . . .	5
Manganese lactate . .	1
Warm distilled water .	74
Dissolve, filter, and add	
Simple syrup . . .	900

To be flavoured with one drop of lemon oil to 16 oz.

Syr. Calcii Phosphatis

Cretæ præcipitat. . .	ʒvj.
Acid. phosph. concent. .	ʒiij.
Aq. flor. aurantii . .	ʒj.
Aq. destillat. . . .	ʒviij.
Sacch. alb. . . .	ʒxxiv.

Dilute the acid with the water, add the chalk gradually, stirring constantly. When effervescence ceases, filter, wash the filter with the orange-flower water, and in the filtrate dissolve the sugar without heat. Make up to 32 oz. with water, and strain.

Syr. Camphoræ Co. (Bristol Infirmary and B.P.C.)

Acidi benzoic. . .	ʒiij.
Acid. acetic. glacial.	ʒiij. ʒv. ɱxx.
Aceti scillæ . . .	Oij.
Aceti ipecacuanhæ . .	Oij.
Ol. anisi . . .	ʒij.
Camphoræ . . .	ʒij.
Tr. opii . . .	ʒx. ʒv. ɱxx.
Sacchar. alb. . .	lb. xxviij.
Sacchar. ust. . . .	q.s.
Aq. ad . . .	Cong. iv.

Dose: ʒj. (= tr. opii ɱj.) occasionally.

In making syr. camph. co., Bristol Infirmary, it is an economy of time to use at least 10 oz. of rectified spirit in which to dissolve the anise oil, camphor, and benzoic acid. Mix the solution with the laudanum, and add to the cold syrup with constant stirring, then sufficient sacch. ust. to give the syrup a tint the same as tr. camph. co.

Syr. Cascaræ Sagradæ, Br.P.C.

Liquid extract of cascara sagrada	ʒiv.
Liquid extract of liquorice	ʒiij.
Carminative tincture	ʒij.
Syrup to	Oj.

Dose: ʒj. to ʒss.

Syr. Cascaræ, B.P.C., is miscible liquid extract ʒiij., syrup ʒiij., and glycerine to ʒxx.

Cherry Pectoral Syrup

Morphin. sulphat.	gr. iij.
Vin. antimon.	ʒiij.
Vin. ipecac.	ʒiij.
Acet. sanguinar.	ʒij.
Syr. pruni virg.	ʒiij.

Dose: A teaspoonful every four hours.

This formula was given by the late Mr. J. C. Ayer to a friend.

Syr. Chondri Co., N.F.

Chondri crispi	gr. xvj.
Ext. ipecac. liq.	ɱxvj.
Ext. scillæ liq.	ʒss.
Ext. senegæ liq.	ʒss.
Tr. opii camph.	ʒvij.
Talc. purif.	ʒss.
Sacchar. alb.	ʒxx.
Aq. destillat. ad	ʒxxxij.

Macerate the Irish moss in 2 oz. of boiling water on a water-bath for fifteen minutes, strain through flannel, which wash with water to make 2 oz. of strained liquor. Mix the tincture, fluid extracts, 10 oz. of water, and the French chalk; shake occasionally for half an hour, and filter, returning the filtrate until it comes through clear. To this add the sugar and the mucilage, dissolve without heat, strain, and wash the strainer with water to 32 oz.

Dose: ʒj. to ʒss. for coughs.

Syr. Cinchonæ (Donovan)

Exhaust 8 oz. of cort. cinchon. flav. by double maceration with 48 oz. of proof spirit; filter, and evaporate to 8 oz.; reserve. Treat the marc by decoction with three successive 16 oz. of boiling water, and evaporate the filtered decoctions to 8 oz. Mix the liquors, and add

Anhydrous quinine	283 gr.
Oxalic acid	55 gr.
Sugar	21 troy oz.
Gum arabic	4 troy oz.

Heat to promote solution, allow to cool, make up to 32 oz. with syrup, and filter through flannel.

Dose: ʒj.

Syrupus Coccl

Liquor. cocci	ʒvj.
Syrup. simplic. ad	ʒxvj.

M.

Syrup. Codeinæ

1. Ex-Br.P.C.

Codeine, in powder	ϑij.
Proof spirit	ʒx.
Distilled water	ʒx.

Dissolve, and add

Syrup to	ʒxx.

Mix.

Dose: ʒss. to ʒij.

II

Codeine	℈j.
Dilute phosphoric acid	ʒj.
Proof spirit	ʒj.

Dissolve, and add

Syrup to	ʒxx.

Mix.

We prefer the second formula. It seems to soothe tickling cough better, and it is nicer to taste.

Syr. Codeinæ Phosphatis, C.F.

Codeine phosphate	℈ij.
Alcohol	ʒvij.
Distilled water	ʒiij.
Syrup to	ʒxx.

Dissolve the phosphate in the water and alcohol, then add the syrup.

Curative Syrup

(syn. *Digestive Syrup*)

Many preparations are now sold under these names. The following formula is one which was published in *The Chemist and Druggist* many years ago. It appears to be the basis of the majority of formulas now in use:—

Pulv. boracis	℈j.
Pulv. gentianæ	℈j.
Pulv. capsici	gr. ij.
Ol. gaultheriæ	gtt. xiv.
Ol. sassafras	gtt. x.
Dec. aloes co. conc.	ʒij.
Succ. taraxaci	ʒss.
Spt. rectificat.	ʒij.
Theriac. ad	ʒiv.

Rub the powders together, and upon them gradually pour the oils dissolved in the spirit, then add the decoction, triturating constantly, and next the juice. Transfer to a measure, add treacle to 4 oz., and mix.

Dose: A teaspoonful.

The only advisable alteration is to replace ½ oz. of the aloes decoction by as much ext. cascaræ sag. liq. The following is one of many American formulas which attempt to imitate Seigel's syrup:—

Ext. culvers root	6½ lbs.
Ext. stillingia	6⅔ lbs.
Ext. poke	6⅔ lbs.
Ext. butternut	6⅔ lbs.
Ext. dandelion	6½ lbs.
Ext. prince's pine	5 lbs.
Ext. mandrake	4 lbs.
Ext. gentian	2 lbs.
Ext. colocynth	2 lbs.
Ext. black haw	10 lbs.
Aloes	9 lbs.
Powdered capsicum	1 lb.
Powdered sassafras	10 lbs.
Borate of soda	10 lbs.
Spirit of sea salt	12 lbs.
Golden syrup	30 gals.
Water to make	90 gals.

Mix.

Dose: For tonic and alterative effect take 15 to 20 drops three times a day, immediately after eating. For cathartic effect, one to three teaspoonfuls at bedtime.

The following recipes have been contributed by manufacturers and retailers:—

I

'Cascara evacuant' (P., D. & Co.)	ʒij.
Spt. ammon. arom.	ʒij.
Tr. cardam. co.	ʒij.
Ess. zingiberis	ʒj.
Syr. simplicis	ʒiv.
Aquam ad	ʒxvj.

Misce.

ʒss. ad ʒj. ex aquâ sum. post cibos.

2

Ext. tarax. liq.	ʒj.
Pulv. boracis	℈j.
Tr. capsici	ʒiij.
Pulv. gentian.	℈ij.
Euonymin.	gr. xij.
Aq. chloroform.	ʒij.
Dec. aloes co. conc.	ʒv.
Ext. cascar. sag. liq.	ʒj.
Liq. ammon. fort.	gr. xxiv.
Theriacam ad	ʒxx.

Misce.

3

Rhei	gr. cxlvj.
Cascaræ sagradæ	gr. ccclxxx.
Capsici	gr. x.
Alcohol. dil.	ʒviij.

Percole et adde

Pepsini	gr. lxxx.
Ext. aloes	gr. lxxx.
Ol. sassafras	♏x.
Syrup. ad	ʒxx.

Misce.

4

Ext. taraxaci	ʒij.
Ext. cascar. sag. liq. (insip.)	ʒiss.
Tr. capsici	♏lxxx.
Glycer. pepsin. (Armour)	ʒj.
Ol. sassafras	♏x.
Dec. aloes co. conc. (sine croco) ad	ʒviij.

Misce.

♏x. ad ♏xx. ex aq. t.d.s. p.c.

5

Powdered Barbados aloes	ʒiv.
Powdered capsicum	ʒij.
Powdered gentian	ʒiss.
Oil of sassafras	ʒj.
Soy	Cong. ss.
Water to	Cong. j.

Mix.

Dose: Ten to sixty drops in water, after meals.

American Digestive Syrup

Ext. cascar. sag. liq.	ʒvj.
Dec. aloes co. conc.	ʒij.
Tr. cardam. co.	ʒiss.
Tr. rhei co.	ʒiss.
Tr. zingib. fort.	ʒvj.
Tr. capsici	ʒvj.
Glycerini	ʒiv.
Aq. chlorof.	ʒv.
Theriac. ad	ʒxxv.

Misce.

A teaspoonful for a dose.

Tonic Digestive Syrup

Pulv. aloes barb.	ʒss.
Pulv. sodii bibor.	gr. x.
Pulv. gentianæ	gr. xv.
Pulv. capsici	gr. j.
Ol. sassafras	♏ij.
Ol. gaultheriæ	♏j.
Ext. taraxaci	ʒss.
Aquæ destillatæ	ʒj.
Spt. vini rect.	ʒj.
Theriac. ad	ʒij.

Misce.

Dose: Ten to twenty drops, in a little sweetened water, after meals.

Digestive Herbal Syrup

Euonymini	gr. xxxvj.
Dec. aloes co. conc.	ʒxij.
Pulv. boracis	ʒij.
Ol. sassafras	ʒj.
Pulv. capsici subtil.	ʒj.
Pulv. gentianæ	ʒiij.
Ol. gaulther.	♏xij.
Spt. vini rect.	ʒiss.
Ext. tarax. liq.	ʒiss.
Theriac. ad	ʒxxiv.

Misce.

Dose: Twenty to thirty drops.

Syrupus Croci, P.L.

Saffron	ʒx.
Boiling water	Oj.

Macerate for twelve hours, strain,

and in the liquor dissolve 3 lbs. of sugar.

This syrup is also made by dissolving 2 lbs. of sugar in a pint of 1-in-20 tincture (spt. 1, aq. 4).

The B.P.C. syrup is a mixture of Squire's glycerin 1 and syrup 7.

Cough-syrups

P.F. 12

Aceti scillæ	ʒj.
Aceti ipecac.	ʒj.
Spt. chlorof.	ʒiij.
Syr. rhœados	ʒiv.
Syr. ribis nig.	ʒv.
Glycerini	ʒv.

P.F. 13

Vin. ipecac.	ʒviij.
Syr. scillæ	ʒxxiv.
Syr. tolut.	ʒxxxij.

P.F. 14

Spt. chloroformi	ʒss.
Acidi phosphoric. dil.	ʒss.
Vini ipecac.	ʒiss.
Oxymel. scillæ	ʒiij.
Syr. rhœados	ʒiv.
Syrup. tolutani	ʒiij.
Aquam ad	ʒxvj.

Children's Cough-syrup

P.F. 53

Glycerini	ʒx.
Ext. ipecac. liq.	ʒiiss.
Tr. benzoin. co.	ʒij.
Oxymel scillæ ad	Oij.

Children's Cherry Cough-syrup

Vin. ipecac.	ʒj.
Oxymel. scillæ	ʒv.
Spt. chloroformi	ʒvj.
Spt. æther. nit.	ʒvj.
Syr. rhœados	ʒv.
Syr. violæ	ʒxv.
Aquam ad	ʒxx.

Infantile Cough-syrup

P.F. 2

Syrup. ipecac.	ʒxx.
Syr. scillæ	ʒxx.
Syrupi Godfrei	ʒxx.
Glycerini	ʒiij.
Aquam ad	ʒlxxij.

Syrupus Ferri Bromidi, Br.P.C. and B.P.C.

Iron wire, free from oxide	ʒss.
Bromine	gr. 525
Sugar	ʒxiv.
Distilled water	a sufficiency

Put the iron and 4 oz. of water into a pint flask standing in cold water, add the bromine in successive quantities, agitating the flask until the froth is white. Having dissolved the sugar in 6 oz. of water by heating, filter the bromide solution into the warm syrup and make up to 20 oz. by adding water.

Dose: ʒss. to ʒj. (ʒj. = $FeBr_2$ gr. ivss.).

The N.F. syrup contains 10 per cent. of $FeBr_2$. The Br.P.C. formula was really a modification of one published in the 1887 edition of *The Chemist and Druggist Diary*.

Syrupus Ferri Hypophosphitis, Br.P.C. and B.P.C.

Strong solution of hypophosphite of iron	ʒiv.
Syrup	ʒxvj.

Dose: ʒss. to ʒij.

The N.F. syrup contains potassium citrate ʒvj., ferric hypophosphite 256 gr., orange-flower water ʒij., and syrup to ʒxxxij.

Syr. Ferri Iodidi c. Quinina

Quininæ sulphat.	gr. x.
Acid. hypophosph.	q.s.
Potassii iodidi	gr. iv.
Syrup. ad	ʒiv.

Mix the quinine with a drachm of water, and add the acid drop by

drop to dissolve, then add the syrup to 4 oz. and the iodide dissolved in 10 to 20 drops of water. Shake well, and add

Syr. ferri iodidi . . ʒiv.

Mix, and if cloudy add hypophosphorous acid drop by drop to clear the syrup.

Syrupus Ferri Lactophosphatis

Sulphate of iron . . ʒj.
Phosphate of sodium . ʒj. ℈ij.

Dissolve each salt in a pint of hot water, mix, and add carbonate of sodium until effervescence ceases. Collect the precipitate on a strainer, wash it well, drain, and dissolve it in the following mixture :—

Concentrated lactic acid . ʒiss.
Phosphoric acid, s.g. 1·500 ʒij.
Water . . . . ʒiv.
Orange-flower water . ʒij.

Filter, and add sufficient thick syrup to make 60 oz.

Syr. Ferri Limonad.
(Goodell)

Tr. ferri chloridi, U.S.P. ʒss.
Acid. phosphoric. dil. . ʒvj.
Spt. limonis, U.S.P. . ʒij.
Syrup. ad . . . ʒvj.

M.

Dose : A dessertspoonful after meals.

Syr. Ferro-mangani Saccharati

Syr. ferri oxidati sacch. . ʒviij.
Syr. mangani oxid. sacch. ʒij.
Spt. vini gallici . . ʒx.
Spt. rectificat. . . ʒx.
Tr. aurantii . . . ʒj.
Tr. aromat. . . . ♏xx.
Tr. cinnamomi . . ♏xv.
Essent. vanillæ . . ♏xv.
Æther. acetici. . . ♏v.
Syrupum ad . . . ʒxxxvj.

M.

Syr. Ferri Oxidati Saccharati

Solution of ferric chloride (s.g. 1·480). . . ʒx.
Solution of caustic soda, a sufficiency

Mix the iron solution with a gallon of water and add solution of soda to precipitate ferric hydroxide. Wash the precipitate well with water, then mix the magma with

Sugar . . . . ʒx.
Solution of soda (s.g. 1·333) ʒss.

Heat on a water-bath until clear, and add water to make the liquor weigh 20 oz.

A mixture of 1 volume of this preparation with 3 volumes of syrup is practically syr. ferri oxidat. sol., P.G., and syr. ferri sacch. sol., N.F.

Syr. Ferri Peptonati

Peptonate of iron . . ʒiv.
Distilled water . . ʒiij.

Heat and add to

Syrup (by weight) . . ʒxxix.

Evaporate on a water-bath to 30 oz. by weight, and add the following mixture :—

Brandy . . . . ʒxiv.
Aromatic tincture . . ♏xv.
Tincture of cinnamon . ♏xv.
Tincture of ginger . . ♏xv.
Essence of vanilla . . ♏xv.
Acetic ether . . . ♏viij.

Syr. Ferri et Quininæ Hydrobromatum, Br.P.C.

(*Syrupus Ferri Bromidi c. Quininâ, B.P.C.*)

Acid hydrobromide of quinine . . . gr. 175
Diluted hydrobromic acid ♏192
Distilled water . . ♏288

Mix the acid with the water, and dissolve the quinine in the mixture; then mix with

Syrup of ferrous bromide to ʒxx.

Dose : ½ to 1 fl. dr.

The above are the revised B.P.C. quantities.

Syrupus Ferri, Quininæ et Strychninæ Hydrobromatum, Br.P.C.
(*Syrupus Ferri Bromidi c. Quininâ et Strychninâ, B.P.C.*)

Add 2½ gr. of powdered strychnine to the acid solution in the last formula.

Dose: ½ to 1 fl. dr.

Syr. Ferri Quininæ et Strychninæ Phosphatis
(syn. *Easton's Syrup; Syr. Trium Phosphatum*)

1. The Original

Sulphate of iron .	ʒv.
Phosphate of sodium	ʒvj.
Sulphate of quinine .	ʒiij. gr. xij.
Strychnine . .	gr. vj.
Diluted phosphoric acid . . .	ʒxiv.
Sugar . . .	ʒxiv. (troy)
Distilled water, diluted sulphuric acid, and solution of ammonia, of each .	a sufficiency

Dissolve the sulphate of iron in 1 oz. of boiling water and the phosphate of sodium in 2 oz., mix the solutions, collect the precipitate, and wash it until the washings are tasteless. Dissolve the quinine sulphate in 2 oz. of water with a sufficiency of the sulphuric acid; precipitate with ammonia, collect and wash carefully. Dissolve this precipitate, the phosphate of iron, and strychnine in the phosphoric acid, then add the sugar and dissolve the whole, and mix without heat.

The product should measure about 24 oz., and to get this the iron precipitate should be well drained.

II. Ex-Br.P.C.

Strychnine (in powder) . . .	gr. v.
Concentrated phosphoric acid (sp. gr. 1·5) . . .	ɱlxxv.
Distilled water . .	ɱccxxv.

Dissolve, and add

Phosphate of quinine	ʒij.

Dissolve by the aid of a gentle heat, and add

Syrup of phosphate of iron to . . .	ʒxx.

Mix thoroughly.

III. U.S.P.

Glycerite of the three phosphates . .	250 c.c.
Syrup to . . .	1,000 c.c

Glycerite of the phosphates of iron, quinine and strychnine is made by heating soluble ferric phosphate (pyrophosphate) 80 grams in water 250 c.c. at 70° C. till dissolved, then adding phosphoric acid (85 p.c.) 200 c.c., quinine 104 grams, strychnine 0·8 gram, and water to 500 c.c. Mix this with glycerine 500 c.c.

According to Aitkin's 'Science and Practice of Medicine,' the original Easton's syrup contains 1 gr. of phosphate of iron, 1 gr. of phosphate of quinine, and $\frac{1}{32}$ gr. of strychnine in each fluid drachm. The Br.P.C. one contains ¾ gr. of phosphate of quinine only, the quantity having been reduced because with 1 gr. per dr. the syrup becomes almost solid in the winter time. This is really due to the excessive acidity of the syr. ferri phosph., B.P. On this point *see* the *C. & D.*, 1893, I., 373, 422, and 795, also 1893, II., 293. We prefer the first formula, increasing

the sodium phosphate to ʒvij. and neutralising with sodium bicarbonate, as in making syr. ferri lactophos. The ferrous-phosphate precipitate should be thoroughly drained, and instead of using ac. phos. dil., B.P., use ac. phosph. (sp. gr. 1·500) ʒij. and a sufficiency of water to make 7 oz. of the solution of phosphates. Add this to a syrup made by dissolving 1 lb. of sugar in 7 oz. of water. The product measures 24 oz. Equal parts of glucose syrup and simple syrup produce a better keeping preparation. 'Easton's Syrup' is a 'known, admitted, and approved remedy.'

Syrupus Ficorum

To make plain syrup of figs, chop up 2 oz. of figs and boil in a pint of water until nearly half of the water is evaporated. Strain off 10 oz. of the decoction, and in it dissolve 1 lb. of sugar.

B.P.C. is figs 4, sugar 5, water to 10.

Syr. Ficorum Co.

1

'Cascara evacuant' .	ʒxij.
Syr. ficorum, P.F., ad .	Oiv.

2

Ol. anisi . . .	♏xv.
Ol. carui . . .	♏xv.
Ext. cascaræ sag. liq. .	ʒj.
Ext. sennæ liq. . .	ʒij.
Sodii bicarb. . . .	ʒss.
Syrup.	ʒviij.
Alcohol	ʒj.
Syr. sennæ . . .	ʒij.
Syr. ficorum, P.F., ad .	ʒxviij.

3

B.P.C. is ext. sennæ liq., syr. rhei aa. ʒj. ʒvj., syr. ficorum ad ʒxx.

Syrupus Ferri Pyrophosphatis

Pyrophosphate of iron .	ʒiiss.
Distilled water . .	ʒj.
Syrup of orange-flowers .	ʒiiss.
Syrup to . . .	ʒxxiv.

Dissolve the pyrophosphate in the water by a gentle heat, and add the syrups.

Syrup of Fox's Lungs

A very old preparation, no longer made from fox's lungs. Syrupus rhœados is generally given nowadays, but there are diversions from this rule. Thus, in some places syrup of tolu is given, in others syrup of squill, and even simple syrup coloured with liquorice. The syrup is used for the treatment of coughs, generally along with paregoric elixir. In Norwich the following mixture is given:—

Liquorice . . .	ʒiiss.
Water	Oiiiss.
Dissolve and add	
Sugar	lb. viij.
Dissolve by heating, strain through flannel, and add	
Ipecacuanha-wine . .	ʒiv.

Syrupus Gummi Rubri

(*Syr. Eucalypti Gummi, B.P.C.*

A solution of sugar 12 oz. in liquid extract 20 oz. [Squire.]

Syr. Eucalypti Co., B.P.C., is eucalyptus gum ʒiss., eucalyptus oil ♏xxv., sugar ʒij., acacia mucilage ♏200, water to ʒxx. Dissolve the gum in the water, strain, dissolve the sugar in the liquid; mix the oil and mucilage and add to the syrup.

Syrupus Glycyrrhizæ Improved

Ammonium glycyrrhizinate	ʒj.
Rectified spirit . .	ʒiss.
Water	ʒviss.

Dissolve, and add to

Syrup	℥iv.

Ammonium glycyrrhizinate may be made by treating extract of liquorice, dissolved in water, with dilute sulphuric acid, collecting the precipitated glycyrrhizin and washing with water to free it from sulphuric acid, then dissolving in the smallest possible quantity of ammonia solution and evaporating to dryness.

Syr. Glycyrrhizæ Aromaticus, C.F.

Liquorice-root, cut small .	℥viij.
Solution of ammonia .	ʒj.
Oil of coriander . .	♏xx.
Oil of cloves . . .	♏x.
Alcohol (95-per-cent.) .	ʒij.
Granulated sugar . .	℥xxvij.
Distilled water to . .	℥xl.

Macerate the liquorice with 16 oz. of distilled water, mixed with 160 minims of solution of ammonia, for twelve hours; strain and express, reserving the colature. Repeat this operation twice with the pressed marc, straining, pressing, and reserving the colature after each maceration. Mix the several colatures, and evaporate over a water-bath to 16 oz., cool, and filter. To the filtrate add the oils, previously dissolved in the alcohol, and dissolve the sugar, by percolation, in the mixed liquids, adding enough syrup to make 40 oz.

Alternative Formula

Fluid ext. of liquorice .	℥viij.
Oil of coriander . .	♏xx.
Oil of cloves . . .	♏x.
Alcohol (95-per-cent.) .	ʒij.
Granulated sugar . .	℥xxvij.
Distilled water to . .	℥xl.

Prepare *secundum artem*.

Syr. Hydrarg. Biniodidi

(*Gibert's Syrup*)

Hydrarg. iodidi rub. .	gr. j.
Potassii iodidi . . .	℈iiss.
Aq. destillat. . . .	ʒj.

Solve et adde

Syrup. ad . . .	℥iv.

M.

Dose: A teaspoonful for adults.

Sirop de Gibert, Fr. Codex, is biniodide 1, potassium iodide 50, water 50, and simple syrup 1,900.

Syrupus Hyoscyami

Ext. hyoscyami . .	ʒss.
Aq. bullientis . . .	℥iv.

Rub down in a mortar, filter, and to the filtrate add

Acid. salicylic. . .	gr. iv.
Spt. rectificat. . .	ʒj.
Sacch. alb. . .	ʒviij.

The acid to be dissolved in the spirit first. Make a syrup.

Syrup. Hypophosphit. Comp.

1. Br. P.C. and B.P.C.

Strychnine . . .	gr. j.
Hypophosphorous acid (30-per-cent.) . .	ʒij.

Dissolve, and add

Quinine hypophosphite .	℈j.
Hypophosphite of calcium	℈iv.
Hypophosphite of manganese	℈ij.
Hypophosphite of potassium	℈ij.

Dissolve, filter, and add

Strong solution of hypophosphite of iron .	℥j.
Sugar	℥xiv.

Dissolve, and add

Chloroform ♏xx. in S.V.R.	♏xl.
Distilled water to . .	℥xx.

Mix.

II. Similar to N.F.

Hypophosphite of calcium	ʒvj.
Hypophosphite of sodium	ʒiv.
Hypophosphite of potassium	ʒiv.
Sulphate of manganese	℈iiiss.
Sulphate of iron	℈viss.
Quinine (alkaloid)	ʒij.
Tincture of nux vomica (B.P. '85)	ʒv.
Hypophosphorous acid (30-per-cent.)	a sufficiency
Glycerine	ʒiv.
Water to	ʒxx.

Dissolve the sulphates of iron and manganese in 2 oz. of hot water, acidulated with 10 drops of the acid, and filter; then add 2½ dr. of hypophosphite of calcium, previously dissolved in 2 oz. of hot water, bring to the boil, filter the solution, wash the precipitate with water to 5 oz., and add to the glycerine. Next dissolve the quinine in 1 oz. of water with sufficient hypophosphorous acid, add this to the glycerine solution. Separately dissolve the remainder of the hypophosphites in 8 oz. of water, acidulating slightly with hypophosphorous acid, filter if necessary, and add to the glycerine solution. Then add the tincture, and water to 20 oz.

To make the syrup, dissolve 14 oz. of sugar in a mixture of 4 oz. of above liquor and 4 oz. of water.

III. Tscheppe's Formula

Pyrophosphate of iron	gr. xv.
Hypophosphite of sodium	gr. xlv.
Sulphate of quinine	gr. v.
Strychnine (previously dissolved by itself)	gr. ss.
Hypophosphite or sulphate of manganese	gr. xv.
Thick syrup to	ʒxvj. (by weight)

Dissolve the solids, except the strychnine, in 1 oz. of distilled water with 2 or 3 drops of acid. sulph. dil. Instead of pure strychnine use liq. strych. hydrochlor., B.P., ʒj., add to the solution, then mix with 11 fl. oz. of syrup, which gives the required weight.

IV. D.A.V.

Calcium hypophosphite	35
Potassium hypophosphite	12
Sodium hypophosphite	12
Manganese hypophosphite	2
Iron lactate	5
Pure quinine	1
Pure strychnine	0·06
Citric acid	10
Sugar	600
Water to	1,000

Dissolve the alkaloids and the acid in a little water; dissolve the other salts in the rest of the water by heating and shaking, filter, and dissolve the sugar in the filtrate.

V. C.F.

Calcii hypophos.	ʒxvj.
Sodii hypophos.	ʒxxj. ℈j.
Potassii hypophos.	ʒx. ℈ij.
Mangan. hypophos.	℈iv.
Quininæ	℈ij.
Strychninæ	gr. x.
Ferri sulphatis	ʒij.
Calcii hypophos.	℈iv. gr. ij.
Acid. hypophosph. dil.	q.s.
Acid. phosphoric. conc.	♏xlv.
Sacchari gran.	℥lxv.
Aq. destillat. ad	℥lxxx.

Dissolve the first three hypophosphites in 35 oz. of boiling water, and the manganese salt in 5 oz. of hot water, adding the alkaloids to this with sufficient hypophosphorous acid. Mix the solutions and filter. In the filtrate dissolve the sugar by percolation. Dissolve the iron salt in water ʒvj. and the phosphoric acid, and to this add a solution of calcium hypophosphite 82 gr. in water ʒvj. After twelve hours filter the mixture, add the filtrate to the syrup, and pass water through the percolator to make 80 oz.

℥j. contains sodii hypophos. gr. xvj., calc. hypophos. gr. xij., potass. hypophos. gr. viij., mangan. hypophos. gr. j., ferri hypophos. gr. j., quinine gr. ss., and strychnine gr. $\frac{1}{8}$.

Dose: ʒj. to ʒij.

VI

Calcium hypophosphite .	1,920 gr.
Sodium hypophosphite .	2,560 gr.
Potassium hypophosphite	1,280 gr.
Manganese hypophosphite	160 gr.
Quinine (alkaloid) . .	80 gr.
Strychnine (alkaloid) .	20 gr.
Ferrous sulphate . .	240 gr.
Hypophosphorous acid .	a sufficiency
Granulated sugar . .	130 oz.
Distilled water to . .	160 oz.

Prepare in a similar manner to No. IV.

VII. A.Ph.F.

Calcii hypophos. gr. xx., potass. hypophos. gr. xl., sodii hypophos. gr. xl., ferri hypophos. gr. xx., mangan. hypophos. gr. xx., strychninæ hydrochlor. gr. iiss., quininæ hydrochlor. gr. x., acid. hypophos. ♏xx. Dissolve the hypophosphites (except the iron) in ℥ij. ʒij. of cold water and the iron, quinine, and strychnine salts in ʒv. of water and the acid. Dissolve sugar ℥xvj. in water ℥vj. ʒvj. by boiling; cool to 28° C. Add the above solutions, glycerine ℥ij., and simple syrup to ℥xx.

VIII

Strychn. hydrochlor. gr. $\frac{1}{2}\frac{1}{60}$, sodii hypophosph. gr. ss., ferri pyrophosph., mangan. hypophosph., quininæ sulph. aa. gr. $\frac{1}{2}$, aq. dest. ♏v., syrup. ad ʒj.

The formulas which have been published to imitate Fellows's syrup of hypophosphites are exceedingly numerous and varied in character. Of the foregoing, the third gives a preparation nearest in appearance to the original, and furthest from it in therapeutic activity. This formula is interesting as being the one recommended by several English pharmaceutical authorities, with variations upon the text originally published. The second formula gives an opaque syrup, owing to separated nux vomica resin.

Indigestion-syrup

(syn. *Digestive Syrup*)

Dec. aloes co. conc. (1–4)	℥ss.
Glyc. boracis . . .	♏xxxvj.
Tr. capsici fort. . .	♏ii$\frac{1}{2}$
Tr. gentian. co. . .	ʒiiss.
Ol. sassafras . . .	♏ss.
Ol. gaultheriæ . .	♏ss.
S.V.R.	ʒss.
Liq. taraxaci . . .	ʒss.
Aquam ad . . .	℥ij.

M.S.A.

Syrup of Iodised Cinchona

(syn. *Sirop de Vanier*)

Potassii iodidi . .	ʒiij.
Ext. cinchonæ liq. . .	℥iij.
Ext. aurantii liq. . .	ʒv.
Ext. juglandis liq. . .	℥vj.
Alcohol. (30-per-cent.) .	℥ij. ʒij.
Syrup. ad . . .	Ovj. ℥v.

M.S.A.

Syrupus Iodotannicus

I. Guillermond's

Iodine	ʒss.
Rectified spirit	ʒj.

Dissolve, and add to a solution of

Extract of rhatany	ʒij.
Distilled water	ʒxvj.

Filter after an hour, evaporate to 11 oz., and in this warm liquid dissolve 20 oz. of granulated sugar.

Dose: A teaspoonful.

II. Gay's Modification

Iodine	gr. xij.
Rectified spirit	ʒss.
Tannin	gr. xij.
Syrup to	Oj.

Dissolve the iodine in the spirit by trituration, add the tannin and the syrup. Heat the mixture to boiling (until it ceases to colour starch mucilage), then filter.

III. Wyatt-Wingrave or Martindale

Iodine	2·5 grams
Tannin	4 grams
Alcohol (90-per-cent.)	38 c.c.
Syrup to	75 c.c.

Prepare like No. II.

IV. Baudoin's

Iodine	2 grams
Tannin	4 grams
Distilled water	360 grams

Heat the iodine with the tannin and water in a flask on a water-bath at 60° C. until a drop of the solution ceases to give a blue colour with starch-paper; then dissolve in the solution

Refined sugar	640 grams

V. B.P.C.

Iodine and tannin, of each 87½ grs., alcohol ʒiiss., syrup ʒx. (by weight), syrup of citric acid to ʒxx. (by weight). Prepare like No. II.

This syrup was introduced by Guillermond in 1854. Power and Shedden (*C. & D.*, 1901, II., 244, and *Y.B.P.*, 1901, 466) proved that the syrup is essentially one of hydriodic acid containing unaltered gallic acid or tannic acid according to the nature of the astringent employed. Observations by French workers show that Baudoin's formula is the best (*Jour. de Phar. et de Chem.*, 1905, 433, 1912, 153, and 1914, 236).

Syr. Ipecacuanhæ Aceticus, Br.P.C. and B.P.C.

A solution of sugar 2¾ lbs. in 20 oz. of acet. ipecacuanhæ.

Syr. Ipecac. et Opii, N.F.
(*Syrup of Dover's Powder*)

Tr. ipecac. et opii	ʒxxiss.
Spt. cinnamomi	ʒj.
Aq. cinnamomi	ʒj.
Syrupum ad	ʒxxxij.

Mix in above order. All preparations U.S.P.

Jackson's Pectoral Syrup

Sassafras pith	ʒss.
Gum arabic	ʒv.
Water	ʒviss.

Allow to stand for twelve hours, stirring occasionally, then add

Sugar	ʒx.

Dissolve without heat, then add

Hydrochloride of morphine	gr. iij.

Mix.

Dose: ʒj. to ʒij. several times daily.

This is the original of syr. morphin. co., N.F.

Syrup of Lemon

Ol. limonis	ʒvj.
Spt. rectificat.	ʒvj.
Dissolve and add to	
Mag. carb. levis	ʒij.
Aq.	ʒiij.
Filter, and add	
Succ. limonis conc.	ʒxvj.
Syrup. ad	Cong. j.

Syr. Limonis sine Acido, B.P.C., is tr. limonis 1, syrup. 7.

Syrupus Lobeliæ

Sacchari	lb. ij.
Acet. lobeliæ	ʒxvj.

Dissolve by the aid of heat not exceeding 180° F., and continued for three hours; skim, and strain.

A mixture of equal parts of the vinegar and syrup is also given.

Sirupus Mangani Oxydati, D.A.V.

Potassium permanganate	87·5
Hot water	5,000

Dissolve, cool to 15° C., and add a solution of

Glucose	50
Water	100

When the red colour has disappeared, wash the precipitate by decanting with cold water until the washings are only slightly altered by solution of calcium chloride. Collect on a cloth, and add to the precipitate

Sugar, in powder	850
Solution of sodium hydroxide (15 p.c.)	50
Water	1,000

Dissolve on a water-bath; then evaporate by the same means to a total weight of 1,500.

Sirupus Mannæ, P.G.

Manna	10 parts
Alcohol (90-per-cent.)	2 parts
Water	33 parts
Sugar	55 parts

Dissolve the manna in the spirit and water, filter the solution on the syrup, and dissolve.

All by weight.

The N.F. and B.P.C. syrups contain respectively 6½ and 2½ per cent. of alcohol.

Syrupus Mannæ Co., B.P.C.

Macerate cut-small senna 2 oz. and bruised fennel 87½ grs. in water 12 oz. for twenty-four hours. Press, filter, and evaporate to 6 oz.; add alcohol 1 oz. 96 minims. After six hours filter, and in the filtrate dissolve manna 2 oz. and sugar 11 oz., making up to 20 oz. by weight with water.

Syrupus Marrubii Comp.

I

Syr. pruni virg.	ʒj.
Syr. ipecacuanhæ	ʒj.
Tr. camph. co.	ʒiv.
Ext. marrubii liq.	ʒij.
Syr. tolutani	ʒv.

Mix, add a little fullers' earth, and allow to settle. Decant the clear syrup, and filter the rest.

Dose: ʒj. thrice daily for cough.

II

Ext. marrubii liq.	ʒss.
Syr. tolutani	ʒxxxij.
Tr. opii aquos.	ʒj.

Dose: Adults, one teaspoonful; fourteen years, half a teaspoonful; seven years, thirty drops—two or three times a day.

Syr. Marrubii, B.P.C.—Infuse for an hour horehound 8½ oz. in enough boiling water to cover; strain, press, and evaporate to 9 oz. 192 minims; filter when cold, and in the filtrate dissolve sugar 17 oz., making up to 20 oz. (1 pint) with water.

Syrupus Papaveris, B.P.C.

Ext. papaveris liq.	ʒviij.
Syrupum ad	ʒxx.

M.

Dose: ʒss. to ʒj.

Syrupus Opii Bristoliensis

Opii	ʒiv.
Sacchar. crudi . .	cwt. j.
Aq. ad . . .	Cong. xij.

Infuse the opium in a gallon of boiling water for an hour or so, strain, and add to the sugar with more water to make 12 gallons of syrup.

Syrupus Phosphatum Comp.

(syn. *Parrish's Syrup; Chemical Food*)

Parrish's Original Formula

Protosulphate of iron .	ʒx.
Phosphate of soda . .	ʒxij.
Phosphate of lime . .	ʒxij.
Glacial phosphoric acid .	ʒxx.
Carbonate of soda . .	℥ij.
Carbonate of potash .	ʒj.
Muriatic acid . . .	of each
Solution of ammonia .	q.s.
Powdered cochineal .	ʒij.
Water sufficient to make .	ʒxx.
Sugar . . .	lb. iij. (troy)
Oil of orange . . .	♏x.

Dissolve the sulphate of iron in 2 oz. of boiling water, and the phosphate of soda in 4 oz. of boiling water. Mix the solutions, and wash the precipitated phosphate of iron till the washings are tasteless. Dissolve the phosphate of lime in 4 oz. of boiling water with sufficient muriatic acid to make a clear solution, precipitate it with the solution of ammonia, and wash the precipitate. To the freshly precipitated phosphates, as thus prepared, add the phosphoric acid previously dissolved in the water. When clear add the carbonates of soda and potash, and afterwards sufficient muriatic acid to dissolve the precipitate. Now add the cochineal mixed with the sugar, apply heat, and when the syrup is formed strain and flavour it. Each teaspoonful contains about 1 gr. of phosphate of iron and 2½ gr. of phosphate of lime, with smaller proportions of the alkaline phosphates, all in perfect solution.

II

Ferri sulphatis . .	ʒv.
Sodii phosphatis . .	ʒvj.
Calcii chlorid. crystal. .	ʒviij.
Sodii phosphatis . .	ʒviij.
Potassii carbonatis . .	ʒij.
Sodii carbonatis . .	ʒij.
Liquor. cocci . .	q.s. ad color.
Acid. phosphoric. (s.g. 1·500) . . .	ʒxv.
Sacchari granulat. .	lb. xxxij.
Aquæ flor. aurantii . .	Oij.
Aquæ . . .	Oxij. ʒiv.

Form ferrous phosphate—*i.e.*, dissolve the ferrous sulphate and sodium phosphate ʒvj. separately in boiling water, mix together, neutralise free acid with sodium carbonate, strain through twill, wash and squeeze the precipitate strongly. Treat the calcium chloride with sodium phosphate ʒviij. in the same manner, omitting the sodium carbonate. Transfer the precipitates to a mortar, pour upon them the phosphoric acid, and dissolve by stirring; now add the sodium and potassium carbonates and filter. Have a syrup made with the sugar and water, add to it the filtered solution, the orange-flower water, and sufficient cochineal solution to give the desired colour.

III. Br.P.C.

(*Syr. Ferri Phosphatis Co., B.P.C.*)

Iron wire, free from oxide	gr. xxxviiss.
Phosphoric acid, sp. gr. 1·500	ʒj.
Distilled water . .	ʒv.

Put these into a glass flask, so that the liquid completely covers the iron wire, plug the neck with cotton wool, and heat gently till dissolved. Add this solution to the following when the latter has cooled :—

Precipitated chalk .	ʒij.
Phosphoric acid, sp. gr. 1·500 .	ʒiv.
Distilled water .	℥ij.

Mix and add

Bicarbonate of potassium .	gr. ix.
Phosphate of sodium .	gr. ix.

Filter and set aside. Then take of

Cochineal .	ʒss.
Distilled water .	℥viiss.

Boil for fifteen minutes and filter, pouring over the filter enough distilled water to produce 7 oz. of filtrate. To this add

Refined sugar .	℥xiv.

Heat till dissolved, and strain. When cold, add the filtrate set aside, orange-flower water 1 oz., and distilled water to make 20 oz.

The product contains ferrous phosphate ½ gr. and calcium phosphate ⅘ gr. per drachm.

The first of the foregoing formulas for syr. phos. co. is that contributed by the late Mr. Edward Parrish, of Philadelphia, to the *American Journal of Pharmacy*, xxix., 573. Syrup made according to it deposits heavily. The second is a modification strictly on Parrish's lines, but it produces a syrup rather less than half the strength. The formula, however, works well, and the resulting syrup is excellent. No. III. formula is also satisfactory, and the syrup is about Parrish's strength, but it is somewhat acid, and would be better with 13 oz. instead of 14 oz. of sugar. Syr. phosph. co. sometimes gives trouble by crystallising. This is due to excess of sugar and acid ; the latter tends to cause inversion of the sugar, and dextrose is precipitated. Precipitation of lime invariably occurs in syrups made the original strength, and occasionally a trace of iron is precipitated as ferric oxyphosphate. This can be avoided by using such a formula as No. II., which gives the desired pharmaceutical and therapeutical results. 'Parrish's Syrup' is a non-liable title.

SYRUPUS PICIS LIQUIDÆ (U.S.P. and B.P.C.).—Mix tar 5 grams in a mortar with clean white sand 10 grams, add water 100 c.c., knead thoroughly, and reject the water. Treat the residue with alcohol 50 c.c., add magnesium carbonate 10 grams, sugar 50 grams, and, after thorough trituration, water 400 c.c. ; stir occasionally for two hours, and filter. Dissolve 800 grams of sugar in the filtrate by heating gently, and make up to 1,000 c.c. with water. The B.P.C. uses 52·5 c.c. of alcohol.

Syrupus Pini Strobi Co., N.F.
(*White Pine Expectorant*)

White-pine bark	2⅔	troy oz.
White-cherry bark	2⅔	,,
Spikenard-root	150	grs.
Balm of Gilead buds	150	,,
Blood-root	120	,,
Sassafras-bark	100	,,
Morphine sulphate	8	,,
Chloroform	90	mins.
Sugar	24	troy oz.
Alcohol, water and syrup of each	a sufficiency	

Reduce the first six ingredients to No. 40 powder, and make 16 oz. of tincture by maceration and percolation with a menstruum consisting of 1 volume of alcohol and 7 volumes of water. In this tincture dissolve the sugar and the morphine sulphate, add the chloroform and sufficient syrup to make 32 oz. of syrup.

Syrupus Pini, B.P.C.
(*Syr. Pini Pumilionis, Martindale*)

Ol. pini pumilionis	ʒss.
Talci purif. vel kaolin.	q.s.

Misce et adde

Alcohol	ʒv.
Tr. croci	ʒvj.
Glycerini	ʒv.
Syrupum ad	ʒxx.

Martindale's (the original) contains 1 oz. of the oil, mag. carb. levis ʒiij. (instead of talc), and tr. croci ʒv.

Syr. Potassii Sulphoguaiacolatis
(syn. *Sir. Kalii sulfoguajacolici; Guakalin, D.A.V.*)

Potassium guaiacol sulphonate	7
Water	23

Dissolve and add

Syrup of orange peel, P.G.	65

Mix and add

Alcohol (90 p.c.)	5

All by weight. Filter.

Syrupus Pruni Virginianæ
I. Br.P.C.

Wild-cherry bark (in No. 20 powder)	ʒiij.
Refined sugar (in coarse powder)	ʒxv.
Glycerine	ʒx.
Distilled water	a sufficiency

Moisten the powder with distilled water, and macerate for twenty-four hours in a closed vessel; then pack in a percolator, and percolate 9 oz. Dissolve the sugar in the liquid by agitation, without heat, add the glycerine, strain, and, if necessary, wash the strainer with distilled water to 20 oz.

Dose: ʒss. to ʒij.

This formula was adopted by the British Pharmacopœia, 1898, but is not quite satisfactory. The following, by Mr. E. W. Lucas, is better:—

II

Virginian prune bark, in 20 powder	6 oz.
Distilled water	14 oz.

Macerate for twelve hours, press strongly, and reserve the expressed liquid. Add 8 fl. oz. more water, macerate for four hours, and press as before. Mix the expressed liquids and filter on to

Refined sugar	30 oz.
Glycerine	2½ fl. oz.

Dissolve without heat, and add distilled water to produce 40 oz.

A.Ph.F. adopts this, using chloroform-water ʒxxiv. in place of as much distilled water.

Syr. Quininæ Hydriodidi

Quinin. hydriodidi acid.	℈iv.
Syrupi	ʒx.

Triturate the acid hydriodide of quinine in a mortar, and add the syrup gradually, stirring constantly to dissolve the salt.

The B.P.C. prescribes quinine hydriodide ℈viij., water ♏200, citric-acid syrup to ʒxx.

Syr. Quininæ Hydrobromidi

I

Quininæ hydrobrom. .	℈iv.
Acid. hydrobrom. .	ʒiiss. ♏x.
Aquæ destillatæ . .	ʒj.
Syrup. ad . . .	ʒx.

Mix the quinine with the water, and add the acid. Filter, if necessary, and add the syrup.

II. B.P.C.

Quinine acid hydrobromide 2, syrup of orange to 100.

Other salts of quinine may be made into syrups similarly, dissolving the salt, where practicable, by the aid of a dilute acid.

Syrupus Rhamni, B.P.C.

Fresh buckthorn juice	ʒx
Strong tincture of ginger	♏50
Oil of pimento . .	♏j.
Alcohol . . .	ʒv.
Sugar . . .	ʒxiij.
Distilled water to .	ʒxx.
	(by weight)

Evaporate the juice to 6 oz., and after twelve hours filter; dissolve the sugar in this, add the tincture, oil, and alcohol mixed, and make up to 20 oz. weight with water.

A modification of Syr. Rhamosi, B.P., 1867.

Syrupus Rhei

I. E. W. Lucas

Rhubarb-root (cut small)	ʒij.
Boiling distilled water .	ʒxv.

Macerate for twelve hours, strain, press, and filter on to

Refined sugar . .	ʒxxiv.

Dissolve by gentle heat and add

Oil of coriander . .	♏v.
Alcohol (90-per-cent.) .	ʒj.

Product about 2 lbs. 10 oz.

II. H. G. Greenish

Rhubarb-root (cut small)	2 oz.
Oil of coriander . .	5 minims
Alcohol (90-per-cent.) .	60 minims
Water . . .	15 fl. oz.
Sugar . . .	24 oz.

Macerate the rhubarb with the water for twelve hours, strain, and press; filter, boil for a minute, and cool. For every 12 fl. oz. of filtered liquid add 24 oz. of sugar, and dissolve by gentle heat. Finally add the oil dissolved in the alcohol.

III

Lenton recommends the syrup to be made with a fluid extract 1 part with syrup 7 parts. The fluid extract is made by repercolation of a mixture of rhubarb (No. 10 to 20 powder) 1 lb. and coriander 8 oz., with 20-per-cent. alcohol containing 5 per cent. of glycerine, half a minim of coriander oil being added to each ounce of the finished product.

Syr. Rubi Aromat., C.F. and N.F.

Blackberry-root . .	ʒv.
Cinnamon and nutmeg, of each . . .	ʒiv. gr. xxij.
Cloves and pimento, of each	℈vij.
Granulated sugar . .	ʒxxvj.
Alcohol (95-per-cent.), water, and blackberry-juice, of each .	a sufficiency

Reduce the first five ingredients to coarse powder, and percolate with a mixture of alcohol and water, equal parts, until 10 oz. is obtained. Add this to 18 oz. of the juice, and dissolve the sugar in the mixture by shaking. Make up to 40 oz. with blackberry-juice.

Syrupus Sarsæ Comp.

I

Rad. sarsæ cont. . .	ʒxij.
Lig. guaiac. rasp. . .	ʒviij.
Lig. sassaf. concis. . .	ʒviij.
Cort. cinchon. cont. .	ʒiv.
Rad. chinæ concis. . .	ʒviij.
Fruct. anisi cont. . .	ʒij.
Aquæ fervid . . .	♎vj.

Digest three hours, filter, evaporate to 40 oz. and make into a syrup with

Sacch. alb. . . .	lb. iv.

II

Dec. sarsæ co. conc. . ℥iiss.
Syrupi . . . . ℥xviiss.

Syrupus Scammonii

Pulv. scammonii virg. . ℥iv.
Pulv. jalapæ . . . ℥iv.
Rad. zingib. contus. . ℥j.
Spt. rectificat. . . ℥xxiv.

Percolate and displace with water.

Sennæ . . . . ℥viij.
Aq. tepid. . . . ℥xx.

Infuse for twelve hours, strain, and make a syrup with 1½ lb. sugar, to which add the tincture, and make up to 40 oz. with ginger syrup.

Syr. Scillæ (Merson)

Sacchari albi . . . ℥xxxviij.
Aquæ . . . . ℥xv.

Dissolve by heat, and when the syrup is about blood-heat add

Ext. scillæ liq. acet. . ℥v.

Should weigh 3 lbs. 10 oz.; if not, add water to bring it up.

Syrup. Senegæ

Ext. senegæ liq. . . ℥iv.
Aquæ . . . . ℥x.

Mix, and filter through kaolin. In the filtrate dissolve

Sugar . . . . ℥xiv.

Strain, and make up to 20 fl. oz. with water.

Syrupus Sodii Hypophosphitis, B.P.C. and Br.P.C.

Dissolve sod. hypophos. ℈viij. in distilled water ʒiv., and add syrup to produce ℥xx.

Dose: ʒj. to ℥ss.

Syrupus Sodii Santonici

(Dr. George Harley's)

Pulv. santonini . . gr. xij.
Sodii bicarbonatis . . ℈j.
Sacchari albi . . . ʒxij.
Aq. dest. . . . q.s.

Dissolve the bicarbonate in 2 oz. of boiling water, add the santonin 2 gr. at a time until dissolved, filter, evaporate to ʒvj., and dissolve the sugar in the solution.

Dose: ℥ss. to ʒj. for an adult.

Soothing-syrups

P.F. 3

Ol. anisi . . . ʒij.
Ol. carui . . . ʒss.
Ol. anethi . . . ʒj.
Ol. fœnicul. . . . ʒss.
S.V.R. . . . . ℥iv.
Magnes. carb. levis . . ʒj.
Syr. simplicis . . . ℥lxiv.
Liq. cocc. . . . q.s.

Shake well and decant or filter.

P.F. 4

Aq. anethi (1 in 40) . ʒiss.
Aq. anisi, B.P. . . ℥ss.
Potass. bromidi . . ℈ij.
Tr. hyoscyami . . ʒj.
Tr. sennæ . . . ♏xlv.
Syr. aurantii ad . . ʒij.

M.

Dose: Under one month, ten to fifteen drops; under two months, fifteen to twenty drops; under three months, twenty to thirty drops; over three months, thirty to sixty drops.

Syrupus Sulphatum (Symonds)

Beberinæ sulphatis . . ℈ij.
Quininæ sulphatis . . ℈v.
Ferri sulphatis . . ℈v.
Potassii sulphatis . . ʒv. ℈j.
Sodii sulphatis . . ʒv. ℈j.
Acid. sulph. dil. . ʒiij. ♏xx.
Glycerini . . . ℥j.
Aq. destillatæ . . . ʒiv.

Solve, filtra, et adde

Chloroformi . . . ♏x.
Spt. rectificat. . . ♏xx.
Syrup. ad . . . ℥xx.

Dose: ℥ss.

Teething-syrups

I. Carminative

Tr. anthem. flor.	ʒj.
Tr. card. co.	ʒss.
Glycerin.	ʒiss.
Syrup.	ʒvij.

Dose: ʒss. to ʒj.

II

Sodii bromidi	ʒj.
Ext. apii liquid.	ʒj.
Ess. anisi	ʒj.
Syrup. ad	ʒviij.

Dose: ʒss. to ʒj.

Sirupus Thymi, D.A.V.

Liquid ext. of thyme	150
Simple syrup	850

Take both ingredients by weight.

Syrup. Tres, E.I.P.

Syr. ferri phosphat. co.	ʒij.
Syr. hypophosphit. co.	ʒj.
Syr. Eastoni	ʒj.

Syrupus Triplex, B.P.C., is one volume of each syrup.

Syrupus Violæ

I

Fresh violets (blue pansies)	ʒxvj.
Carbonate of potassium	gr. v.
Boiling water	Oiiss.
Sugar	lb. viiss.

Infuse the flowers in the water, in which the carbonate of potassium has been dissolved, for twenty-four hours, strain without pressing, and dissolve the sugar in the liquor.

II. Phar. Edin.

Fresh violets	lb. j.
Boiling water	Oiss.
Sugar	lb. viiss.

Infuse the violets in the water contained in a covered vessel, and after twenty-four hours strain, but do not squeeze. Dissolve the sugar in the infusion.

III. B.P.C.

Violet petals 23, boiling water 46, sugar 87. Infuse as in No. II. for twelve hours, press 48 of liquid through linen; stand till clear, decant, and dissolve sugar in the liquid to make syrup 100.

Whooping-cough Syrups

I

Acidi sulphurosi	ʒj.
Vin. ipecacuanhæ	ʒiv.
Tr. belladonnæ	ʒij.
Syr. papaveris	ʒj.
Syr. scillæ	ʒiv.
Aquam ad	ʒxij.

II

Ammonii bromidi	℈xvj.
Acid. nitro-mur. dilut.	ʒss.
Glycerini	ʒij.
Oxymel. scillæ	ʒij.
Syrupi tolutani	ʒij.
Ext. glycyrrhizæ liq.	ʒiss.
Spt. chloroformi	ʒss.
Aquam ad	ʒxx.

Dose of each: Half to two teaspoonfuls, according to age.

Worm-syrups

I

Santonin.	℈j.
Liq. sennæ dulc.	ʒj.
Glycerini	ʒss.
Syr. anisi	ʒiiiss.

Rub the santonin to powder, and mix with the glycerine; add the other ingredients, and mix.

Doses: Under 1 year, ʒss.; between 1 and 2 years, ʒj.; between 2 and 4, ʒiss.; between 4 and 6, ʒij.; and for older children, ʒiij. To be taken the first thing in the morning, fasting, after the bottle has been shaken.

II

Santonini	ʒij. ℈ij.
Liq. sennæ dulcis	ʒviij.
Glycerini	ʒiv.
Olei anisi	♏xx.
Olei fœniculi	♏v.
Olei amygdal. essent.	♏j.
Spt. rectificati	ʒij.
Aquæ destillatæ	ʒij.
Syrupi	ʒxxij.

This is a private modification of the original formula, No. I.

Syr. Zingiberis, C.F.

Liq. zingiberis	ʒj.
Syrupi	ʒix.

M.

NOTE.—An excellent syrup of ginger can be prepared from soluble essence of ginger. Such a syrup gives clear mixtures in dispensing. See the notes on p. 265.

TABELLÆ VEL TABLETTÆ—TABLETS

Several forms of medicaments go under the name tabellæ, or tablets. For convenience they may be divided into three classes — viz., (1) tablets made by compression; (2) tablets made by moulding without compression, commonly called tablet-triturates; and (3) tablets made from a chocolate basis, as provided by the British Pharmacopœia.

The Manufacture of Compressed Tablets is a special branch of the art of pharmacy, largely because the apparatus required was until recently not so suitable for the small scale as for factories. Small compressing-machines are now obtainable which are quite efficient for retail purposes. It is important that the dies be sharp and smooth, for upon these factors the finish of the tablet largely depends. It is not possible to do more in this book than to indicate in a general way how the materials for tablets are prepared for compression, the subject being sufficient in itself for a book. An excellent one by Mr. Joseph R. Wood, M.A., Ph.G., of New York, is published by J. B. Lippincott Company, Philadelphia and London ('Tablet Manufacture,' 7*s.* 6*d.* net.).

Most of the substances to be made into tablets by compression go through three processes before reaching the machine. First they are triturated so as to get them into a uniform state of division, previous to mixing and granulating. Some substances (*e.g.*, potassium chlorate) need no other preparation than this, the trituration or grinding being carried only to the stage at which most of the salt can be separated as a granular powder by sifting. In the second stage the medicament is mixed with a relatively small amount of excipient or disintegrating agent, then damped with some liquid, and the pasty mass granulated by passing through a brass sieve (Nos. 12, 16, and 20 mesh) and dried. The third process is lubrication—*i.e.*, spraying with water-white petroleum, or

sprinkling with finely sifted French chalk or boric acid—the last alone being suitable when the tablets are required to form clear solutions with water. Lubrication prevents the material from sticking to the dies and punches.

Each substance to be compressed has its peculiarities, which prevent a classification of them all under general methods of treatment. The following notes by Mr. Wood will be of service, however :—

Excipient

Water or alcohol is required to moisten the powder when it contains a dry adhesive (*e.g.*, gum or sugar). Cane sugar is the most suitable all-round adhesive, and is best for tablets that have to dissolve clear. It is used as powder or syrup. Glucose syrup is also employed. Acacia gum, as 10 or 20 per cent. mucilage, is used in the proportion of 2 to 10 per cent. of the finished granulation. Tragacanth is used in making compressed lozenges. Dextrin and wheaten flour are similar in effect to acacia gum.

Bases

When the dose of medicine would form a very small tablet, it is necessary to mix it with a base to give it greater bulk. This especially applies to alkaloids, mercurials, arsenic, or any other substance given in fraction of a grain doses. A mixture of equal parts of cane and milk sugars is the best base for tablets to be taken internally, but for hypodermics and substances which may be altered by the sugars, ammonium chloride, sodium chloride, and sodium sulphate are used as bases or diluents. For vegetable extracts a base of starch and dextrin is employed.

Disintegrators

For several years after the introduction of compressed tablets some of the products were absolutely insoluble and unbreakable in the alimentary canal. The addition of starch to insoluble substances like bismuth carbonate and phenacetin promotes disintegration. It is used dry or as a paste. The following are Wood's formulas :—

Starch Paste.—Starch 16 oz., water 24 oz. Mix smooth, and add boiling water 64 oz.

Sugar-starch Paste.—Starch 16 oz., water 24 oz. ; mix smooth. Cane sugar 24 oz., water 52 oz. ; dissolve. Mix both and bring to the boil.

Gum-starch Paste.—Starch 16 oz., acacia gum 24 oz., water 76 oz. Mix the powders smooth with the water and boil. [White dextrin or flour may be used in place of acacia gum.]

Granulating

Soluble chemicals are ground, sifted to No. 16 or 20 (the finer powder being rejected), and dried. Lubricate with boric acid. In cases where there is no adhesive property, granulate with equal parts of syrup and water. Insoluble chemicals should be mixed with 15 per cent. of starch and granulated with one of the above pastes.

Drugs (vegetable) should be in No. 80 powder, and have 5 per cent. of tragacanth added before granulation with syrup and water.

Tinctures and similar liquid galenicals are reduced by evaporation to the state of a dry extract (when cold). While the extract is soft, starch (15 to 20 per cent.) and milk sugar (to give bulk) are well mixed with it. Dry in the cold, grind, and pass through a No. 16 or No. 20 sieve.

The following are examples of Mr. Frank Edel's methods:—

For Doses of a Few Grains

Phenacetin . . .	500 gr.
Powdered sugar . .	50 gr.

Reduce the phenacetin to fine powder, and mix. Moisten with a few drops of syrup and a sufficiency of water. Pass through a No. 20 sieve. Dry, and again sift. Spray the powder with 20 to 30 drops of vaseline solution (1 in 40) and make 100 tablets.

In the same manner are made tablets of acetanilide, antipyrin, bismuth salts, chloralamide, salicin, salol, and sulphonal.

Tablets of Fractional Grain Doses

Calcium sulphide . .	gr. xxv.
Sugar of milk . .	ʒij. gr. v.

Mix thoroughly, add 4 or 5 drops of simple syrup, then moisten with water, and pass through a No. 20 sieve. Dry. Lubricate the granular powder by spraying 10 drops of vaseline solution over it, and make into 100 tablets.

In the same manner may be made tablets of aloin, arsenious acid, caffeine, codeine, digitalin, ext. nucis vomicæ, mercurous chloride, mercurous iodide, morphine hydrochloride, podophyllin, and strychnine.

Chocolate-basis Tablets.—Cocoa-powder greatly facilitates compression, the oil in the cocoa preventing the tablets sticking in the mould. Mr. Stewart Hardwick's formula is

Medicament as ordered.	
Cocoa-powder	½ gr.
Sugar of milk to	2 gr.

No difficulty is experienced in making such a powder into tablets. Tinctures of aconite, belladonna, digitalis, strophanthus, nux vomica, &c., may be mixed with the sugar of milk, and evaporated over a water-bath, the cocoa-powder added, and the mixture compressed in the usual way. Tablets of extract of cascara sagrada and combinations of cascara sagrada and podophyllin are easily made. The dried and powdered extract should be used, half its weight of liquorice-powder added, and a trace of heavy paraffin oil sprayed over the powder.

The British Pharmacopœia recognises one tabella—viz., tab. nitroglycerini—but gives no formula for making it, merely stating that the tablets are of chocolate, each weighing 2½ gr., and containing $\frac{1}{100}$ gr. of pure nitroglycerine. The following are good formulas:—

Tabellæ Nitroglycerini

I

Fry's cocoa-powder (without oi.) . . .	3 oz.
Powdered sugar . .	6 oz.
Oil of theobroma . .	4½ oz.
Nitroglycerine . .	24 gr.

Mix the cocoa-powder with the sugar, pass through a fine sieve. Liquefy the oil of theobroma on a water-bath, and dissolve the nitroglycerine in it. Then add the powders, stirring the whole well together, and when mixed cut into 2½-gr. pills on the pill-machine and mould into tablets.

II. E. W. Lucas

Alc. sol. of nitro-glycerine	100 parts
Powdered chocolate	1,450 parts
Powdered sugar .	2,500 parts
Mucilage of acacia .	390 parts
Powdered acacia .	360 parts
Distilled water .	200 parts

All by weight.

Mix the powders, add the solution of nitroglycerine, and stir *with a light hand* until evenly mixed. Add the mucilage and water, and work up to a soft mass; roll into a cake, and divide into lozenges weighing exactly 5 grains.

According to the 'Physicians' Pharmacopœia,' the cocoa and other ingredients, including the medicine to be administered, are rubbed together in a mortar, massed in the same way as a pill-mass with the liquid excipient, and cut into pills on a pill-machine. Each pill is then taken, dusted with a powder of equal parts powdered sugar and arrowroot to prevent sticking, and placed in a tube of brass or wood standing vertically on a tile, an accurately-fitting piston of wood giving a round form to the lozenge on being forced down the tube on the top of the pill. By judicious manipulation of the pill-cutter quite presentable tablets may be made without the mould.

Theobroma-excipient Tablets.—An improvement upon the foregoing originated in St. Thomas's Hospital pharmacy, where Mr. Edmund White, B.Sc., and his assistants used with success, instead of Mr. Hardwick's powder, a mixture of oil of theobroma 1 part and starch 3 parts, the oil being melted and the starch-powder stirred in before cooling. Of this mixture 1 to 2 parts is added to each 5 parts of the powder to be compressed; mix well but lightly in a mortar, divide into doses, and compress each dose. The method is excellent for small quantities of tablets. For working on the large scale the following excipients and methods are used:—

Theobroma Emulsion

(*Emulsio Theobromatis*, *B.P.C.*)

Oil of theobroma . .	ʒv.
Hard soap	ʒss.
Powdered tragacanth . .	℈iiss.
Benzoic acid . . .	℈ij.
Water to	ʒxx.

Dissolve the soap in 5 oz. of water by heat, add the hot solution to the melted theobroma, and mix by whisking or agitation; shake in the tragacanth, add the benzoic acid, then the rest of the water.

Ether-Alcohol Solution of Theobroma

(*Liquor Theobromatis Æthereus*, *B.P.C.*)

Oil of theobroma .	3 oz. 131 gr.
Ether to . .	20 fl. oz.

Dissolve and add an equal volume of rectified spirit as required for use.

These solutions act like ethereal

solution of vaseline – viz., as lubricants—but they also have a welding influence and are employed as under noted.

The methods of working are as follows :—

First Method

The substance to be compressed should be in the finest possible powder, and is triturated with sufficient of the theobroma emulsion to form a damp coherent powder, so that it can be shaken through a No. 20 or 30 sieve without pressure and without adhering to the meshes. The sifted product, after exposure to the air for a few hours, or during the night, is ready for compression. If heat is used, the powder must be allowed to stand for an hour or two at least for the theobroma to solidify. The following are examples of tablets thus made :—

Tablettæ Acetanilidi Co., B.P.C.

Acetanilide	℈x.
Caffeine	℈iiss.
Sodium bicarbonate	℈v.
Glucose in powder	gr. xxv.
Theobroma emulsion	a sufficiency

For 100 tablets.

Tab. Aloini Co., B.P.C.

Aloin	℈iiss.
Ipecacuanha	gr. xxv.
Extract of nux vomica	gr. xiiss.
Sugar	℈iiss.
Theobroma emulsion	gr. x.
Distilled water	a sufficiency

For 100 tablets.

Saccharin Tablets

(*Tablettæ Glusidi, B.P.C.*)

Saccharin	℈iiss.
Sodium bicarbonate	gr. xlv.
Theobroma emulsion	a sufficiency

For 100 tablets.

Tab. Sodii Bicarb. Co., B.P.C.

(*Soda-Mint Tablets*)

Sodii bicarb.	℈xxv.
Ammon. carb.	gr. xiiss.
Glusidi	gr. ij.
Pulv. acaciæ	℥ss.
Ol. menth. pep.	♏xiiss.
Emuls. theobromatis	q.s.

For 100 tablets.

Tablettæ Thyroidei, B.P.C.

Dried thyroid gland	℈x.
Powdered sugar	℈x.
Theobroma emulsion	a sufficiency

For 100 tablets.

Second Method

Add the ether-alcohol theobroma solution all at once to the substance or mixture contained in a mortar; triturate quickly; pass through a No. 20 or No. 30 sieve, and allow to dry by exposure to the air for an hour or two. Following are useful examples of this method :—

Cascara Tablets

(*Tab. Cascaræ, B.P.C.*)

Extract of cascara	℥v.
Potato starch	gr. lxxv.
Ether sol. theobroma	℥j.
Alcohol	♏xv.

To make 300 1-gr. tablets, or fewer of stronger cascara content.

Compound Podophyllin Tablets

(*Tab. Podophyllini Co., B.P.C.*)

Podophyllum resin	gr. xxv.
Calomel	℈v.
Alc. extract of belladonna	gr. xvj$\frac{2}{3}$.
Theobroma emulsion	a sufficiency.

For 100 tablets.

Compound Rhubarb Tablets

(*Tab. Rhei Co., B.P.C.*)

Rhubarb	132 gr.
Socotrine aloes	98 gr.
Myrrh	65 gr.
Oil of peppermint	9 minims
Sugar	186 gr.
Ether-alc. theobroma	54 minims
Alcohol	36 minims

For 100 tablets.

Hypodermic Tablets are made with a basis of granulated sodium sulphate or sugar of milk, the former being the better. Sodium acetate is used for diluting morphine acetate. On the retail scale, the powder for each tablet should be weighed. Self-feeding tablet-machines are obtainable.

Tablet-triturates, or moulded tablets, are made with sugar of milk and a mould consisting of a flat plate of vulcanite having holes bored into it, which fits upon another vulcanite plate upon which are as many projections as holes, and these projections push out the tablets from the holes. Each tablet generally weighs a fraction over a grain, but the weight of the tablets formed by the mould is determined by making powdered sugar of milk into a paste with proof spirit. The paste should have such a consistency that it will just spread with a spatula. The mould is filled with the paste, the tablets pressed out, dried, and their weight determined. From this the weight of sugar of milk required for a specified number of tablets can be calculated. Some of the sugar of milk must be omitted for the medicament put in, and how much is a matter of experiment. It is obvious that powders vary in density. Thus a grain of calomel occupies less space than a grain of milk sugar, so that if in making $\frac{1}{10}$ gr. calomel triturates, $\frac{1}{10}$ gr. sugar of milk is omitted, the resulting triturates will really be slightly stronger of calomel. Tablet-triturates are generally employed for homœopathic doses. Soluble substances are added in solution.

Tabellæ Acidi Arseniosi

Trituration of arsenic (1 in 100)	48 gr.
Cocoa-powder	70 gr.
Tragacanth-powder	24 gr.
Saccharin	1 gr.
Rectified spirit	30 minims
Essence of vanilla	24 minims
Distilled water	30 minims

Mix in the above order, and divide into 100 tablets.

Thirst-tablets

Acidi tartarici	gr. 2½
Sodii bicarbonat.	gr. iss.
Sacchari albi	gr. vj.

Ft. tabella.

Peptomanganate-of-Iron and Cascara Tablets

Ferruginal. (Upjohn)	gr. iv.
Ext. nuc. vomicæ	gr. ⅛
Acid. arsenios.	gr. $\frac{1}{100}$
Cascarin.	gr. ss.
Ext. sarsæ	q.s.

Misce fiat tabella.

Sulphur Tablets

(syn. *Blood-Purifying Tablets*)

Trochiscus sulphuris, B.P.

Worm Tablet or Lozenge

Santonini	gr. ij.
Hydrarg. subchloridi	gr. j.

To form one lozenge (with basis) or a tablet.

TINCTURÆ—TINCTURES

The following processes are referred to under the formulas as A and B :—

A. *Maceration.*—The comminuted drugs are placed in a bottle with the whole of the menstruum, the bottle well closed, and the contents shaken for a few minutes. Maceration is continued for five days, the bottle being well shaken several times a day; the tincture is then strained, the marc pressed thoroughly, and the united liquors filtered. Experiments have proved that four days' maceration suffices to extract from drugs as much as can be extracted in eight days, so it is not profitable to continue maceration longer than five days. The English practice of washing the marc with an additional portion of menstruum, so as to make the volume of tincture the same as the original volume of menstruum taken, was peculiar, and prejudicial to uniformity. Accordingly the British Pharmacopœia, 1898, introduced for a few tinctures the plan of macerating in three-fourths of menstruum for seven days, filtering, and washing the residue with the remaining fourth of menstruum, without making up the finished product to a stated volume.

B. *Percolation.*—Put the comminuted drug into a basin, and to every ounce of it add ½ oz. of the menstruum; mix thoroughly until the drug appears uniformly moistened; put the drug on a piece of thick paper, and pour into the percolator; shake it down lightly, cover, and in four hours press down the powder with a plunger—*e.g.*, a pestle. With few exceptions, such as orange-peel, most drugs have to be firmly pressed down. If the tincture is weaker than 1 in 5, no further maceration is required, and percolation may be proceeded with; but in the case of stronger tinctures, when the drug has been packed in the percolator, menstruum is poured upon it until tincture begins to drop through and the menstruum just covers the surface of the drug. Then close the outlet of the percolator, place the cover on, and set aside for from twelve to twenty-four hours. At the end of this period allow percolation to proceed, adding more menstruum as required—*i.e.*, when the upper portion of the drug appears to have no liquid in it—and so continue until the whole of the menstruum has been used. In some cases, if the menstruum is rectified spirit, when the percolate ceases to drop, the residual tincture may be displaced with water, in which case 22½ oz. of spirit is required for every pint of tincture; but when the menstruum is proof spirit, it is best to press the marc, add the liquor to the percolate, then sufficient menstruum to make the required volume, and filter. [*Compare with* the B.P., 1898, p. 440, and this volume p. 618.]

At the International Conference for the Unification of Potent Medicines held in Brussels in 1902 an agreement was arrived at with reference to the strengths of various tinctures, and the latest issues of all the European Pharmacopœias have

adopted the formulas agreed upon. Accordingly the potent tinctures are now prepared as follows:—

Tinct. Aconiti, to contain 0·025-per-cent. alkaloid, prepared with 70-per-cent. alcohol.
,, Belladonnæ, 1 of leaves in 10, 70-per-cent. alcohol
,, Colchici, 1 of seeds in 10, ,, ,,
,, Digitalis, 1 of leaves in 10, ,, ,,
,, Ipecacuanhæ, 1 of root in 10, ,, ,,
,, Hyoscyami, 1 of leaves in 10, ,, ,,
,, Nucis vom., 1 of seeds in 10, ,, ,, (0·25 per cent. alkaloids)
,, Opii, 1 of opium in 10, ,, ,, (1 per cent. morphine)
,, Strophanthi, 1 of seeds in 10, ,, ,,

The simple tinctures in the following table require no instructions further than those given. (* indicates B.P.C. also.)

Drug	Menstruum	Strength	Process	Dose
Absinthii	S.T.	1 in 10 (B.P.C.)	A	ʒj. or more
Agarici alb.	S.T.	1 in 10	A	♏xx. to ʒj.
Alstoniæ constrict. (cort.)	S.T.	1 in 10	A	ʒj.
Alstoniæ scholaris (cort.)	S.T.	1 in 10	A	ʒj.
Anacardii (sem.)	S.V.R.	1 in 10	A	♏ij. to ♏x.
Angelicæ, D.A.V.	S.V.T.	1 to 5	A	—
Anisi (sem.)	S.V.R.	1 in 5	B	♏x. to ʒss.
Anthemidis (single flowers)	S.V.R.	1 in 8	A	♏x. or more
Anthemidis (fresh s. flowers)	S.V.R. 2, Aq. 1	1 in 2	A	♏iij. or more
Anthoxanthi	S.V.R. 6, Aq. 1	1 in 10	A	♏ij. to ♏v.
Apocyni (rad.)	S.T.	1 in 10	A	♏v. or more
Arnicæ flor., U.S.P.	S.T.	1 in 5	A	♏xv.
Asclepias (cornuti and tuberosa)	S.V.R.	1 in 10	A	♏x. or more
Benzoin. simp., B.P.C.	S.V.R.	1 in 10	A	—
Boldo	S.T.	1 in 10	A	♏x. to ♏xl.
Bryoniæ, N.F.	S.V.R.	1 in 10	B	—
Burdock-root	S.V.R. 1, Aq. 2	1 in 5	A	ʒj.
Bursæ pastoris Rademacheri, D.A.V.	S.V.R.	5 to 6	A	—
Cacti grand. (fresh)	S.V.R.	1 in 4	B	♏ij. to ♏x.
Calendulæ, Br.P.C.	S.T.	1 in 5	B	♏v. to ♏xx.
Capsici æther.	Ether	1 in 27	A	—
Capsici fort., B.P.C.	S.V.R.	1 in 3	B	♏j. to ♏iij
Cardamom., U.S.P.	S.T. [* 60 %]	1 in 10	B	ʒj.
Cardui Mariæ Rademacheri, D.A.V.	S.V.T.	1 to 2	A	—

Drug	Menstruum	Strength	Process	Dose
Castorei	S.V.R.	1 in 20	A	ʒss. to ʒj.
Chinoidini, D.A.V.	S.V.T.	2 to 17 and 1 of HCl	A	—
Collinsoniæ	S.T. [* 60 %]	1 in 10	A	ʒss. to ʒij.
*Colocynth., P.G..	S.V.R.	1 in 10 (by weight)	A	ɱv. to ɱxv.
Condurango	S.T.	1 in 10	A	ʒss. to ʒij.
Convallariæ, B.P.C.	S.T. [* 60 %]	1 in 8	B	ɱv. to ɱxx.
Coto, B.P.C.	S.V.R.	1 in 10	A	ɱx. to ʒss.
Droseræ rot.	S.T.	1 in 10	A	ɱv. to ɱx.
Ergot. amm., Br.P.C.	Spt. Am. Ar.	1 in 2	B	ɱx. to ʒj.
*Erythrophlœi	S.V.R.	1 in 10	B	ɱv. to ɱx.
Eucalypti fol., B.P.C.	S.V.R. [* 60 %]	1 in 5	B	ɱxv. to ʒij.
Eucalypti gummi	S.V.R. [* 45 %]	1 in 4	A	ɱxx. to ɱxl.
Euonymi, B.P.C.	Alcohol, 45 °/₀	1 in 5	B	ɱx. to ɱxl.
A.Ph.F.	S.V.R.	1 in 5	B	ɱxx. to ɱxl.
Euphorbiæ pilulif., B.P.C.	S.T.	1 in 5	B	ɱx. to ʒss.
Euphorbii (res.)	S.V.R.	1 in 10	A	—
Formicar., D.A.V.	S.V.R.	2 of ants to 3	A	—
Galangæ, D.A.V.	S.V.T.	1 to 5	A	—
Gentianæ, B.P.C.	45 %	1 in 4	B	ʒss. to ʒj.
Gossypii rad.	S.T. [* 60 %]	1 in 4	B	ʒj.
*Guaranæ	S.V.R.	1 in 4	B	ʒj.
*Hellebori (nig.)	S.T. [* 60 %]	1 in 8	A	ɱxx. to ʒj.
Hyoscyam. rad.	S.T.	1 in 8	A	ɱxx. to ʒj.
*Ignatiæ amar.	S.V.R.	1 in 10	A	ɱv. to ɱxx.
Ipecacuanhæ	S.T.	1 in 10	A	ɱv. or more
Kalina, D.A.V.	Abs. Alc.	1 KHO with 6	—	—
Kolæ	S.T. [* 60 %]	1 in 5	B	ʒss. to ʒj.
Lacnanthis	S.T.	1 in 10	A	ɱij. to ɱx.
Lactucarii	S.T.	1 in 10	A	ɱxx. to ʒj.
Laricis resinæ	S.V.R.	1 in 10	A	—
Lupulini	S.V.R.	1 in 8	A	ɱx. to ʒj.
*Lycopodii	S.V.R.	1 in 10	A	ɱxv. to ʒj.
*Maticæ, U.S.P.	S.T.	1 in 10	B	ʒj. to ʒij.
Menthæ Pip., D.A.V.	S.V.R.	1 to 5	A	—
*Moschi, U.S.P.	S.T.	1 in 20	A	ʒj. or more
*Persionis (cudbear), C.F.	S.V.R. 1, Aq. 2	1 in 8	B	—
Physalis alkek.	S.T.	1 in 4	A	ʒj. to ʒij.
Physostigmatis, U.S.P. [*see* p. 806]	S.V.R.	1 in 25	B	ɱx.
Phytolaccæ	S.T. [* 45 %]	1 in 10	A	ɱv. to ɱx.
Pulsatillæ, B.P.C.	60 p.c. Alc.	1 in 10	A	ɱv. to ʒss.
Pyrethri flor.	S.T. [* 60 %]	1 in 4	B	—
Quebracho	S.T. [* 60 %]	1 in 5	B	ʒss. to ʒj.
Salicis nigræ	S.T.	1 in 5	B	ʒss. to ʒij.
Santali, D.A.V.	S.V.R.	1 to 5	A	—
Succini resin.	S.V.R.	1 in 16	A	ʒss. or more
Thujæ occident.	S.V.R. 3, Aq. 2	1 in 10	A	ɱj. to ɱv.
Verbasci Thap.	S.T.	1 in 8	A	ɱxx. to ʒj.
Visci, B.P.C.	Alcohol 45 °/₀	1 in 8	A	ɱv. to ɱx.
Zingiberis, B.P. 1885	S.V.R.	1 in 2	B	ɱv. to ɱx.

S.T. = Proof spirit, sp. gr. 0·920. S.V.R. = Rectified spirit, sp. gr. 0·834.
45 % and 60 % = 45-per-cent. and 60-per-cent. alcohol.
The drugs should be in No. 40 powder. The D.A.V. quantities are by weight.

Tr. Aconiti (Fleming)

(*Tr. Aconiti Fortis, B.P.C.*)

Aconite-root (in fine powder)	ʒxvj. (troy)
Rectified spirit	ʒxvj.

Macerate four days, then percolate with rectified spirit until 24 oz. of tincture is obtained.

Dose: 5 minims three times daily.

The above formula is the original of Alexander Fleming, M.D.Edin., whose doctorate thesis was on the physiological and medicinal properties of *Aconitum Napellus* (1844). The N.F. and B.P.C. formulas provide 7-in-10 tinctures, the former using 90-per-cent. and the latter 70-per-cent. alcohol. The chief use of the tincture now is in dental and veterinary practice. The dose is excessive according to modern ideas.

Tr. Aconiti (Turnbull)

A tincture made from aconite-root ʒxv. and rectified spirit ʒxl. by method A.

This tincture is used chiefly for external application, and has been superseded by the liniment.

Tr. Aloes et Myrrhæ, P.L. and E.

(syn. *Elixir Proprietatis, B.P.C.*)

Socotrine aloes	ʒiv.
Saffron	ʒij.
Tincture of myrrh	Oij.

Prepare by method A.

The synonym Tr. Myrrhæ Co. is erroneously given to this, that being the name of the old Dublin tincture, which did not contain saffron. The preparation is now generally made with aloes 1 oz. and myrrh 2 oz. to the pint of proof spirit.

Tinctura Amara, N.F. and P.G.

(syn. *Stomachic Tincture or Drops; Bitter Stomachic Drops*)

Gentian-root	ʒvj.
Centaury-herb	ʒvj.
Bitter-orange peel	ʒiv. gr. xvj.
Orange-berries	ʒij. gr. viij.
Zedoary-root	ʒij. gr. viij.
Alcohol (95-per-cent.) and water, of each	a sufficiency

Reduce the drugs to No. 40 powder, and by method B make 16 oz. of tincture with a menstruum consisting of alcohol 2 volumes and water 1 volume.

The P.G. quantities are 3, 3, 2, 1, 1, and 50 of menstruum (68-per-cent. alcohol).

Tinctura Antacrida, N.F.

(syn. *Dysmenorrhœa Mixture; Fenner's Guaiac Mixture*)

Perchloride of mercury	℈ij.
Guaiac resin (in powder)	ʒij. (troy)
Canada turpentine	ʒij. (troy)
Oil of sassafras	ʒss.
Alcohol (95-per-cent.) to	ʒxvj.

Put the guaiac and balsam into a flask with 12 oz of spirit, cork loosely, and heat on a water-bath to boiling; then cool and filter. Dissolve the corrosive sublimate in ½ oz. of spirit, and add, with the oil of sassafras, to the filtrate, and wash the filter with spirit to 16 oz.

Dose: 10 to 20 minims.

Tinctura Antispasmodica

Tr. digitalis	ʒx.
Tr. opii	ʒv.
Ol. juniperi	ʒiss.
Spt. tenuior.	ʒviiiss.

Dose: 10 to 20 drops.

Tr. Aurantii Cort. Dulc. Recent., C.F.

Fresh sweet-orange peel	ʒv.
Rectified spirit to	ʒxx.

Prepare by maceration.

Tr. Aurantii Dulc., B.P.C., is 1 in 2.

Tinctura Aromatica, N.F.

Cassia	ʒx. ℈ij.
Ginger	ʒiv. ℈j.
Galangal-root	ʒij. gr. x.
Cloves	ʒij. gr. x.
Cardamoms	ʒij. gr. x.
Rectified spirit and water, of each enough to make	ʒxvj.

Reduce the drugs to No. 40 powder, and make a tincture by method B with a mixture of spirit 2 volumes and water 1 volume.

Tr. Cardamomi Composita
(Lucas and Stevens' Modification)

Cardamom-seeds, bruised	¼ oz.
Caraway-fruit, bruised	¼ oz.
Cinnamon-bark, bruised	½ oz.
Cochineal, in powder	55 gr.
Glycerine	1 fl. oz.
Alcohol (60-per-cent.)	a sufficiency

Macerate the cardamoms, caraways, cinnamon, and cochineal in 18 fl. oz. of the alcohol. Press, filter, and make up to one pint with the menstruum.

Tr. Carminativa, B.P.C.

Cardamom-seeds (bruised)	ʒx.
Stronger tincture of ginger	ʒx.
Oil of cinnamon	mc.
Oil of caraway	mc.
Oil of clove	mc.
Rectified spirit to	ʒxx.

Macerate the cardamoms in 15 oz. of the spirit for a week, decant, express, and dissolve the oils in the mixed tinctures, making up to 1 pint with rectified spirit.

From the Br.P.C.

Dose: mij. to mx.

Tr. Colchici Florum
(Squire)

Digest 2 of fresh colchicum-flowers in 1 by weight of 90-per-cent. alcohol for seven days, press, and filter.

Resembles *Eau Médicinale*. The B.P.C. orders 70-per-cent. alcohol by volume.

Tr. Cresoli Saponata, N.F.

Cresol (U.S.P.)	10½ troy oz.
Soft soap (U.S.P.)	13½ ,,
Alcohol (90-per-cent.) to	32 fl. oz.

Dissolve and filter.

A simple method of making cresol solution.

Tinctura Ferri aromatica, D.A.V.

Solution of dialysed iron	63
Simple syrup	300

Mix, and with each part of the product mix 3½ parts of soda solution (s.g. 1·40) and 33½ parts of water. Shake well, and to the clear solution add

Water	429
Rectified spirit	165
Tincture of orange-peel	3
Aromatic essence	1·5
Tincture of vanilla	1·5

All by weight.

Add to 1,000 grams of the product 5 drops of acetic ether.

Aromatic Essence, D.A.V., is a macerate of cinnamon 5, ginger 2, galangal, cloves, and Malabar cardamoms of each 1, in S.V.R. 50 (by weight).

Tr. Ferri Citro-chloridi, C.F.

Liq. ferri perchlor. fort.	ʒv.
Acidi citrici	ʒvj. ℈x.
Sodii bicarbonat.	ʒvij. ʒv.
Alcohol. (95-per-cent.)	ʒiij.
Aquam ad	ʒxx.

Heat water ʒviiss. to boiling, dissolve the acid in it, add the bicarbonate, heating all the time, and stirring with a glass rod; when effervescence ceases add the iron solution, and cool. Then add the alcohol and water.

Same strength as tr. ferri perchlor., B.P.

Tr. Ferri Muriatis, P.E.

(*Tr. Ferri Sesquichloridi, P.L.*)

Ferri peroxidi hydrat., B.P.	℥vj.
Acid. hydrochloric., B.P.	℥xx.
Spt. rectificati . .	℥LX.

Digest the peroxide in the acid contained in a glass vessel for three days, agitating occasionally; then add the spirit, and filter.

Dose: ♏x. to ʒj.

This preparation was originally made with magnetic oxide of iron, and was, therefore, ferroso-ferric. More than sixty years ago the black oxide gave place to the red, and the tincture became purely ferric. Still the belief has not died out that the 'Edinburgh tincture,' as it is called, differs from and is superior to the B.P. one, and the ferroso-ferric idea persists. The Edinburgh and B.P. tinctures undoubtedly differ in odour, and some doctors of the Edinburgh school state that they get better results with their native article, especially in the treatment of erysipelas.

Tr. Ferri Pyrophos. (Kidd)

(syn. *Tr. Pyrophos. Co.*)

Ferri pyrophosphat. .	ʒj.
Aq. destillat. . . .	ʒviiiss.
Solve et adde	
Spt. rectificat. . .	ʒj.

Glycerine Tinctures

(syn. *Aqueous Tinctures*)

Through the advocacy of the late Sir B. W. Richardson glycerine has been used instead of alcohol for making so-called tinctures, the object being to eliminate alcohol, and thus satisfy the objections of temperance reformers. Originally, the 'tinctures' were made by percolating the finely powdered drug with a menstruum consisting of 2½ volumes of strong acetic acid, 25 volumes of glycerine, and distilled water to 100 volumes. It is better to use, instead of the drug, an equivalent of the fluid extract, evaporating to get rid of the spirit. Generally one-half of the extract taken has to be dissipated. Evaporation should be done at a low heat. Dissolve the residue in the aceto-glycerine menstruum, set the mixture aside for a few days to deposit, and filter.

The following are the tinctures which are efficient when made by the glycerine method. For those marked with an asterisk the corresponding extracts or fluid extracts may be used; in other cases proceed as if they were B.P. :—

Tr. aloes
Tr. arnicæ
Tr. aurantii
*Tr. belladonnæ
*Tr. buchu
Tr. calumbæ
Tr. camph. co.
Tr. capsici
Tr. cascaril.
Tr. catechu
*Tr. chiratæ
*Tr. cinchonæ
Tr. cinchonæ co.
Tr. cinnamom.
Tr. colchici sem.
Tr. conii
Tr. digitalis
Tr. ferri acet.
Tr. ferri perchlor. (no ac. acet.)
Tr. gentianæ co.
*Tr. hyoscyam.
Tr. kino
Tr. krameriæ
Tr. limonis
*Tr. lobeliæ
*Tr. nucis vomicæ
Tr. opii
Tr. quassiæ
Tr. rhei
Tr. scillæ

*Tr. serpentariæ
*Tr. stramonii
*Tr. valerian.
*Tr. valer. ammon. (no acid, but ammon. carb. ʒss. and liq. ammon. fort. ʒj. to the pint).

See also Glycetracts.

Hebra's Tincture

Equal parts by weight of wood-tar, soft soap, and rectified spirit. Mix the tar and soap together in a mortar, and stir in the spirit. Strain if necessary through tow.

Green Tincture of Hempseed

(Wilbert)

Macerate 25 parts of ground hempseed in 25 parts of rectified spirit, then transfer to a percolator and extract with the same menstruum until 100 parts of the percolate is obtained. The tincture has an intensely deep-green colour, and is used for colouring spirituous preparations, essential oils, and soap solutions.

Tr. Hyoscyami Recent.

(Barclay)

Fresh herb (stalk and leaves) thoroughly crushed 1 lb., alcohol (90-per cent.) 20 oz. Macerate for ten days and press. Knead the marc with 4 oz. of distilled water and strain. Add to the first macerate and filter. Product about 34 fl. oz., or 2 lbs. Sp. gr. 0·948.

Tincture of Indian Bark

Tr. cardam. co.	ʒj.
Tr. capsici	ʒij.
Tr. rhei	ʒj.
Tr. myrrhæ	ɱxlv.
Spt. æther. nit., ·850	ʒv.
Syr. aurati (golden syrup)	lb. ij.
Sacch. ust.	q.s.
Aq.	ʒv.

Mix the first five ingredients. Thin the golden syrup with the water, add the tincture mixture, and colour.

Dose: ʒss. to ʒj. for slight bowel-complaint.

See also 'Indian Brandy.'

Tincture of Indigo

Indigo (in coarse powder)	ʒj.
Strong sulphuric acid	ʒiiss.

Macerate for four days, frequently agitating, then add

Water	ʒxij.
Slaked lime	ʒiij.

The lime should be added gradually and with constant agitation. When cold add

Rectified spirit	ʒv.

and wash the filter with another 2½ oz. of rectified spirit.

Tr. Iodi (Churchill), N.F.

Iodine	5 troy oz.
Potassium iodide	1 ,,
Water	8 fl. oz

Alcohol (95-per-cent.) to 30 fl. oz.

Dissolve the iodide in the water and the iodine in this, then make up with alcohol.

C.F. is substantially the same.

Tr. Iodinei, P.E.

Iodine	ʒiiss.
Rectified spirit	ʒxl.

Dissolve the iodine in the spirit with the aid of heat and gentle agitation.

Tr. Iodi Ætherialis

Same strength as the last, ether being the solvent.

Tincture of Iodine Bromide

Iodine	ʒj.
Bromine	ʒss.
Rectified spirit	ʒxvij.
Ether	ʒvij.
Glycerine	ʒij.

Dissolve the iodine in the spirit and the bromine in the ether; add the glycerine to the bromine solution, and mix the two solutions. May be decolorised with sodium bisulphite (ʒij.).

Tr. Iodi Decolorata

I. B.P.C. and C.F.

Iodine	ʒiv. gr. x.
Rectified spirit	℥vss.

Dissolve by the aid of a gentle heat, and add

Strong solution of ammonia	ʒx.

Keep the mixture in a warm place until decolorised, after which dilute it with

Rectified spirit to	℥xx.

Tr. Iodi Decol. Fort., B.P.C., is made by dissolving iodine 1 oz. 312½ gr. in alcohol (90-per-cent.) 16 oz. in the above manner, adding strong ammonia solution 3¾ oz., and making up to 20 oz. with 90-per-cent. alcohol

II. N.F.

Iodine	ʒx.
Sodium thiosulphate	ʒx.
Water	℥iss.
Stronger ammonia water	ʒj.
Alcohol (90-per-cent.) to	℥xvj.

Dissolve the iodine and thiosulphate in the water at a gentle heat; add rectified spirit 2 oz. and the ammonia water. Shake until colourless, cool, and add spirit to 16 oz. Place the bottle in a refrigerator for a few hours, and filter.

Tr. Iodi Oleacea

Iodi	ʒj.
Ol. ricini	ʒvj.
Spt. rectificat. (60 o.p.) ad	℥iij.

Tr. Ipecac. et Opii, U.S.P.

(syn. *Tincture of Dover's Powder*)

Deodorised tincture of opium	℥x.
Fluid extract of ipecac.	ʒj.
Diluted alcohol (41½ p.c.) to	℥x.

Evaporate the tincture on a water-bath to a weight of 8 oz., when cold add the fluid extract, and filter; wash the filter with proof spirit to make the filtrate measure 10 oz.

Tr. Ipecac. Co. e. Scilla

Chloroformi	ʒj.
Spt. camphoræ	℥j.
Liq. morphin. hydroch.	ʒiss.
Tr. zingiberis	℥ss.
Tr. ipecac. (1 in 10)	ʒij.
Tr. scillæ	℥iij.
Glycerinum ad	ʒx.

Dose for adults: A teaspoonful when cough is troublesome.

Tr. Jalapæ Comp.

Jalap	ʒxj. ℈ij.
Scammony	ʒiij.
Turpeth	ʒiss.
Alcohol (60-per-cent.) to	℥xx.

Reduce the solids to No. 40 powder and exhaust by percolation.

Tr. Limonis Recentis

Macerate 2 oz. of the grated outside peel of fresh lemons in 4 oz. of alcohol (90-per-cent.) for four days, and filter. This is Farr and Wright's. *Tr. Limonis Fortis*, B.P.C., is the *whole* peel 1 in 1, which is approximately the same.

Tr. Lobeliæ Acid. (Beach)

Lobelia herb	ʒij.
Capsicums	ʒij.
Vinegar	℥xvj.

Boil the vinegar and pour it upon the drugs in an earthenware jar. Macerate ten days and filter.

Dose: ʒss. as an antispasmodic.

Tr. Lobeliæ Comp.

(*Dr. J. King's Expectorant Tincture*)

Lobelia herb, bloodroot, skunk-cabbage root, wild-ginger root, and pleurisy root, of each 1 oz.; water, 16 oz.; rectified spirit, 48 oz. Reduce the drugs to No. 40 powder and make a tincture by method B.

Dose: ♏x. to ʒss.

Tr. Myrrhæ et Boracis

Formula IV. (p. 164) gives the product most suitable for prescriptions. The B.P.C. tincture resembles this.

Tr. Nervina (Bestucheff)

Liq. ferri perchlor. fort.	ʒvj.
Æther.	ʒiv.
Spt. rectificat. ad	ʒxvj.

Mix the solution of iron with 10 oz. of the spirit contained in a white-glass bottle, add the ether and the rest of the spirit. Cork the bottle well, and expose to the sunlight until decolorised. Then place in a shady spot and remove the cork occasionally until the tincture becomes yellow.

Tr. Opii Aquosa

Opium	ʒxij.
Rectified spirit	ʒxxxij.
Water to	Cong. j.

Dissolve salicylic acid ℈iv. in the water. Boil the opium in 3 pints of the water for twenty minutes until it is thoroughly disintegrated, set aside until cold, decant the clear liquor, and to it add the spirit. Again boil the opium marc with 2 pints of water, and a third time with the rest of the water; add the liquors when cold to the reserved portion, and slightly acidify with glacial acetic acid (about ʒj.). Press the marc, and add the pressings, along with 2 dr. of caramel, and water to make the whole measure 1 gal. Place in a cold cellar for fourteen days and filter.

Tr. Persionis Co., N.F.

Cudbear	ʒij.
Caramel	ʒxij.
Alcohol (90-per-cent.) 1 vol. / Distille water 2 vol.	a sufficiency

Make 12 oz. of tincture of cudbear with the spirituous menstruum by method A. Filter, and add the caramel, dissolved in 2 oz. of water, to the filtrate. Wash the filter with the menstruum to 16 oz.

Tr. Phosphori Co., B.P.C.

Phosphorus	gr. xviiss.
Chloroform	ʒiiiss.

Place in a stoppered bottle, and apply the heat of a water-bath until dissolved. Then add

Absolute alcohol to	ʒxx.

Shake well.

Dose: 3 to 12 minims.

Tr. Physostigmatis, B.P.C.

Made by percolating 4 oz. of the seeds, in No. 40 powder, with sufficient 90-per-cent. alcohol to make 20 oz. of tincture.

Dose: 5 to 15 minims.

Tr. Picis

Ol. picis	ʒj.
Spt. rectificat.	ʒvij.

Mix thoroughly by shaking, and after a day filter.

Tr. Podophyllini (Dobell)

Resin. podophylli	gr. j.
Tr. zingib. fort.	ʒj.
Spt. rectificat. ad	ʒj.

Dose: ʒj. in water at bedtime.

Tr. Podophyllini Ammoniat.

Resin. podophylli	gr. viij.
Spt. ammon. arom.	ʒj.

Macerate three days, and filter.

Dose: ♏j. for children and more for adults.

B.P.C. is precisely the same.

The tincture made with ammonia solution loses its activity.

Tr. Quininæ Ammoniata
(G. Lunan's Modification)

Ammonium carbonate	325 gr.
Quinine sulphate	160 gr.
Distilled water	10 oz.
Rectified spirit	10 oz.

Dissolve the carbonate in the water, add the spirit and the quinine, shake until dissolved, and filter.

Make up to 20 oz. with distilled water.

Mixes clear with aërated water.

Ammoniated Tincture of Quinine with Aconite

Ess. aurantii solubilis	ʒvj.
Tr. aconiti	♏CLX.
Sacchari usti	ʒiij.
Tr. quininæ ammoniat. ad	℥xvj.

Tinctura Quininæ Comp.

Rad. gentian.	ʒiij.
Rad. calumbæ	ʒj.
Rad. tarax.	ʒj.
Rass. quassiæ	ʒiij.
Cort. aurant.	ʒiss.
Cort. cinnam.	ʒss.
Sem. cardam.	ʒij.
Sem. carui	ʒij.
Sem. coriandri	ʒss.
Cocci cacti	ʒss.
Quinin. sulphat.	ʒj.
Acid. nitric. pur.	ʒij.
Acid. sulphurici	ʒij.
Chloroformi	ʒj.
Spt. vini rect.	Oij.
Aquæ	Oiij.

Tr. Rhei Aquosa, N.F. and B.P.C.

Rhubarb	ʒxij.
Borax	gr. lxxiiss.
Potassium carbonate	gr. lxxiiss.
Cinnamon-water	ʒij.
Alcohol (90-per-cent.)	ʒxiv.
Distilled water to	℥xvj.

Dissolve the borax and carbonate in 12 oz. of water, and in this macerate the rhubarb for twenty-four hours; strain, heat to boiling, add the cinnamon-water and spirit, filter while warm, making up to 16 oz. with water.

Ph.G. is the same without borax.

Tr. Rhei Composita
(E. W. Lucas's Improved)

Rhubarb-root, whole	2 oz.
Cardamom-seed, bruised	¼ oz.
Coriander-fruit, bruised	¼ oz.
Glycerine	2 oz.
Alcohol (90-per-cent.)	12 oz.
Distilled water	6 oz.

Soak the rhubarb in the water for twenty-four hours and bruise in a stone mortar. Add to the rest of the ingredients (except glycerine), macerate seven days, press, and add the glycerine.

Tr. Rhei Vinosa, N.F.

Fluid extract of rhubarb	ʒx.
Fluid extract of bitter-orange peel	ʒiiss.
Tincture of cardamoms	ʒx.
Sugar	℥ij.
Sherry wine to	℥xvj.

Mix the first three ingredients with 8 oz. of sherry, and dissolve the sugar in the mixture by shaking. Add sherry to 16 oz., and filter.

Ph.G. is: rhubarb 8, bitter-orange peel 2, Malabar cardamoms 1, sherry 100; macerate a week, filter, and dissolve in the filtrate a seventh part of its weight of sugar.

Tr. Rusci (Hebra)

Ol. rusci	℥j.
Ol. lavandulæ	♏xx.
Ol. rosmarini	♏xx.
Ol. rutæ	♏xx.
Ætheris	ʒij.
Spt. rectificat.	℥ij.

Ruspini's Tincture

Ambergris	♆j.
Cloves	ʒj.
Orris-root	℥viij.
Rectified spirit	Oij.

Reduce the solids to No. 40 powder, and make 2 pints of tincture by method B.

Tr. Sanguinariæ, U.S.P.

Sanguinaria	100 grams
Acetic acid	20 c.c.
Alcohol, Water	of each a sufficiency

Mix alcohol 600 c.c. and water 400 c.c.; moisten the sanguinaria with 30 c.c. of this and the acid, then percolate to 1,000 c.c.

Tr. Strychninæ Nit. (Kidd)

Strychninæ puræ . .	gr. v.
Acid. nitric. fort. . .	♏xl.
Aq. destillat. . .	ʒiss. ♏l.
Spt. rectificat. .	ʒiij. ♏x.

Mix the acid with the water, and dissolve the powdered strychnine in it by shaking and the heat of the hand; then add the spirit.

Tr. Strychninæ Phos. (Kidd)

Strychninæ puræ . .	gr. v.
Acid. phosphoric. dil. .	ʒj. ♏xx.
Spt. rectificat. . .	ʒj. ♏xx.

Dissolve the strychnine in the acid, and add the spirit.

Dose: 2 to 3 drops in water.

Tr. Tolutana Solubilis, N.F.

Balsam of tolu . .	ʒxij.
Magnesium carbonate	ʒj. gr. xiiss.
Glycerine . . .	ʒvj.
Water and alcohol (90-per-cent.), of each enough to make	ʒxvj.

Mix 3 oz. of spirit with the glycerine, and dissolve the balsam in the mixture with the aid of heat, avoiding loss by evaporation. Add 6 oz. of water, and allow the mixture to become cold. Pour off the milky liquid from the resinous precipitate (which is to be rejected), mix it with the magnesium carbonate by trituration, and filter. Lastly, pass enough of a mixture of 1 volume of spirit and 2 volumes of water through the filter to make the whole filtrate measure 16 oz.

One ounce of this with 15 oz. of syrup makes a syrup of tolu.

Tr. Tragacanthæ (Finnemore)

Pulv. tragacanthæ . .	ʒj.
Alcohol. (90-per-cent.) .	ʒiv.

Four to eight minims of this in an ounce of aqueous mixture suffices to suspend insoluble substances therein.

Tr. Valerianæ

The Br. P.C. was the 1885 B.P. tincture—1 of valerian in 8 of 60-per-cent. alcohol.

Tr. Veratri Viridis, Br. P.C.

The 1885 B.P. tincture: 1 of the rhizome in 5 of 90-per-cent. alcohol. *Tr. Veratri*, B.P.C., is 1 in 10 of 70-per-cent. alcohol.

Warburg's Fever-tincture
(syn. *Tr. Antiperiodica, B.P.C.*)

Aloes socotrinæ . .	lb. j.
Rad. rhei . . .	ʒiv.
Sem. angelicæ . .	ʒiv.
Confect. damocratis .	ʒiv.
Rad. inulæ . . .	ʒij.
Croci sativi . . .	ʒij.
Sem. fœniculi . .	ʒij.
Cretæ præparatæ . .	ʒij
Rad. gentianæ . .	ʒj.
Rad. zedoariæ . .	ʒj.
Piper. cubebæ . .	ʒj.
Myrrhæ electæ . .	ʒj.
Camphoræ . . .	ʒj.
Boleti laricis . . .	ʒj.
Spirit. tenuioris . .	Oxxv.

Digest for twelve hours in water-bath, strain, and add quinine sulphate ʒx., continuing the heat until the quinine sulphate dissolves. Cool and filter.

Dose: ʒj. to ʒss.

The above is the formula given by Dr. Carl Warburg to Professor W. C. Maclean, of the Indian Army, in 1875. The B.P.C. omits conf. damocratis, replacing it with opium 2½ gr., black pepper 4½ gr., cinnamon and ginger of each 8 gr. *to the pint*, with 60-per-cent. alcohol.

Tr. Zingiberis

Tr. zingib. fort. B.P. '85	ʒij.
Spt. rectificat. ad . .	ʒj.

Also made by dissolving gingerin ℈viij. in ʒxx. of rectified spirit.

Traumaticin (Auspitz)

Guttapercha tissue .	ʒj.
Chloroform (by weight) .	ʒx.

Ten drachms of chloroform measures barely ʒviss. The French Codex orders ʒix. by weight and the D.A.V. ʒviij. Liquor guttapercha, B.P. 1885, was about the same strength. Auspitz's medicated traumaticin contains chrysarobin ʒj. with the quantity in the formula.

UNGUENTA—OINTMENTS

*** Ung. Acid. Carbolic. Co., C.F.**

(syn. *Compound Phenol Ointment*)

Ung. hydrarg. nit. .	ʒiv.
Sulphur. sublim. .	ʒj.
Phenolis .	ʒij.
Ol. olivæ .	ʒij.
Ceræ flavæ .	ʒij.

Dissolve the sulphur in the heated olive oil and the wax in this. Stir while cooling, and when nearly cold add the phenol. Rub the citrine ointment in a mortar and add the phenolated preparation, mixing well.

*** Ung. Acid. Pyrogallic. (Jarisch)**

Acid. pyrogallic. .	ʒj.
Adipis .	℈j.

[B.P.C., white soft paraffin ʒvij.]

*** Ung. Acid. Pyrogallic. Co. (Unna)**

Acid. pyrogallic. .	gr. lxxv.
Acid. salicylici .	ʒss.
Ammonii ichthyolatis .	gr. lxxv.
Vaselinum ad .	ʒiij.

The titles with asterisks are adopted by the B.P.C. for similar preparations.

Ung. Acid. Salicyl. c. Creosoto (Unna)

Acid. salicylic. .	ʒj.
Creosoti .	ʒij.
Ung. simplicis .	℥ij.
Ceræ flavæ .	ʒj.

Melt the wax and ointment, and incorporate the creosote and acid with the mixture.

Ung. Æther. Ozonic., Ext. Phar.

Ozonic ether .	ʒss.
Lard .	ʒiv.
Benzoic acid .	℥j.
Otto of rose .	gtt. iv.

Ung. Æruginis

Cupri subacetat. .	ʒj.
Adipis .	℈j.

Ung. Althææ (Factitious)

I

Yellow resin .	℈viij.
Yellow wax .	℈viij.

Melt and add

Linseed oil .	℈vj.
Rape oil .	℈xvj.

Stir and add

Palm oil .	℈viij.
Soft paraffin .	℈iv.

Strain if necessary.

II

Ol. olivæ .	ʒv.
Ceræ flavæ .	ʒiss.
Resinæ .	ʒj.
Ol. palmæ .	ʒj.

Melt the resin and wax with the oils. Strain.

Ung. Althææ, B.P.C., is marshmallow-leaves ʒij., dist. water ℈xl. Boil for forty-five minutes, press, filter, and evaporate to a thin extract, which incorporate with lard ℈iv.

Anti-neuralgic Ointment

Chloral hydrate .	ʒj.
Menthol .	ʒj.
Cocoa-butter .	ʒiv.
Spermaceti .	ʒij.

Melt the cocoa-butter and spermaceti, and dissolve the chloral

hydrate and menthol in the mixture.

Directions.—A little of the ointment to be rubbed on the affected parts.

Ung. Antiphelidicum (Hebra)
(syn. *Freckle-ointment*)

Hydrarg. ammon. chlor.	ʒj.
Bismuth. subnit.	ʒj.
Ung. glycerini	℥ss.

Directions.—To be applied to the parts affected three or four times a day.

Ung. Bals. Peruvian.

I

One drachm of the balsam to 1 oz. of lard or any other basis desired.

Ung. Peruvianum, B.P.C., is 1 and 7 of lard.

II. N.H.

Bals. peruviani	ʒij.
Ceræ albæ	ʒij.
Adipis	℥ij.
Ol. rosmarini	♏xx.

Ung. Benzoini

Powdered benzoin	ʒj.
Lard	℥iv.

Ung. Benzoini Comp.

Benzoini	ʒj.
Ceræ flavæ	ʒj.
Adipis	℥iij.

Melt the wax and lard, and digest the powdered benzoin in the warm mixture for half an hour; then strain.

Ung. Bismuthi Oleatis
(Sir T. McCall Anderson)

Bismuthi oxidi	ʒj.
Acidi oleici	ʒj.
Ceræ albæ	ʒiss.
Vaselini	ʒix.

M.S.A.

The B.P.C. ointment is bismuth oleate 1 and white soft paraffin 7.

Ung. Borici Comp., N.H.

Acidi borici	℥j.
Ceræ albæ	℥j.
Ol. amygdalæ	℥ij.
Vaselini	℥ij.

Unguentum Cadini
(syn. *Wilkinson's Ointment; Ung. Sulphur. Co.; Hebra's Itch Ointment*)

Cretæ præparatæ	ʒiiss.
Sulphur. sublim.	℥ss.
Ol. cadini	℥ss.
Saponis mollis	℥j.
Adipis	℥j.

Mix the lard with the soap and oil, then rub the mixed powders with the mixture, gradually added.

N.F. uses precipitated chalk. *Ung. Sulphuris Co.*, B.P.C., has tar in place of oil of cade and precipitated chalk; otherwise the same. *Ung. Wilkinsonii*, D.A.V., prescribes ol. rusci and pulv. sapon.

Ung. Camphoræ

Flor. camphoræ	℥vj.
Adipis	℥xxxij.

Melt the lard, and dissolve the camphor in it.

The B.P.C. ointment contains camphor 1, white soft paraffin 9.

Ung. Capsici
See Chillie Paste.

Ung. Carbolici Co. (Startin)

Zinci oxidi	ʒj.
Pulv. calaminæ	ʒj.
Acid. carbolici	gr. x.
Ung. hydrarg. nit.	ʒj.
Adipem benzoat. ad	ʒj.

Ung. Chrysarobini Co. (Unna)
(*Also B.P.C.*)

Chrysarobini	gr. lxxv.
Acid. salicylic.	ʒss.
Ammonii ichthyolat.	gr. lxxv.
Vaselinum ad	℥ij.

Ung. Conii
(Lenton's Modification)

Conium-juice	2 fl. oz.
Anhydrous wool-fat	½ oz.

Evaporate the conium-juice to ½ oz. by weight, and incorporate

the residue with the wool-fat in a slightly warmed mortar.

There is difficulty in working the juice into hydrous wool-fat: the above goes easily, and the product is elegant.

Ung. Creolini pro Psoriase
(Dr. Phineas S. Abraham)

Creolini	ʒss.–ʒj.
Hydrarg. ammon.	gr. x.–gr. xx.
Saponis mollis	ʒiiss.
Vaselin. ad	ʒj.

Fiat unguentum.

Ung. Creosoti Co. (Startin)

Plumbi carbonatis	℈j.
Hydrarg. ox. rub.	℈ss.
Ol. palmæ	ʒss.
Adipis benzoati	ʒss.
Creosoti	ɱvj.

Date's Ointment

I

Hydrarg. oxid. rub.	ʒivss.
Hydrarg. sulph. rub.	q.s.
Ceræ albæ	ʒivss.
Cetacei	ʒivss.
Adipis	lb. xij.
Ol. origani	ɱxx.

Fiat unguentum.

II

Hydrarg. ammoniat.	ʒiss.
Boli armeniacæ	ʒj.
Ol. origani	ɱvj.
Acid. carbolic.	ɱviij.
Adipis benzoat.	ʒviij.

III

Hydrargyri ammoniat.	ʒxss.
Boli armeniacæ	ʒvj.
Adipis	lb. ix.
Ceræ albæ	lb. ij.
Ol. limonis	ʒj.
Ol. origani	ʒiss.
Ol. lavandulæ	ʒiss.
Ol. olivæ	ʒss.
Liq. potassæ	ɱxx.
Aquæ rosæ	ʒss.

The first formula is supposed to be Dr. Date's own, the second is used in Kent, and the third is a Bristol formula. Zinc ointment, coloured with vermilion and perfumed with origanum, is also said to be sold as Date's ointment.

Deshler's Salve

Resin	ʒiss.
Beeswax	ʒiss.
Turpentine (oleoresin)	ʒvj.
Soft paraffin	ʒij. ʒij.

Melt the first three together, and add the soft paraffin. Allow to stand for a few minutes until foreign matter subsides, and pour off the clear portion. Cool without stirring.

Ung. Diachylon. (Hebra)
(*Ung. Plumbi Oleatis, B.P.C.*)

Lead plaster	ʒiv.
Olive oil	ʒiv.

Melt and incorporate

Oil of lavender	ɱxxv.

Mix.

This is now frequently made with vaseline instead of olive oil, as suggested by Kaposi. The lavender oil is often omitted, but it should not be. Lassar adds carbolic acid 2 per cent.

Eczema-ointment
P.F. 21

Zinci oxidi, Hydrarg. subchloridi	aa. ʒij.
Pulv. plumbi acet.	ʒij.
Ceræ flavæ	ʒvj.
Liq. carbonis deterg.	ʒvj.
Vaselini	ʒxij.

Fiat unguentum.

Ung. Empl. Plumbi, C.F.

Emp. plumbi	ʒj.
Paraffin. mollis	ʒj.
Ol. bergamottæ	ɱiv.

M.S.A.

Ung. Glycerini

Glycerinum amyli, B.P., with the addition of 1 part of powdered tragacanth to every 5 parts of starch used. In making it, damp the tragacanth-powder with three times its bulk of spirit, and incorporate with the mixed ingredients of glycer. amyli, then heat, &c., as directed in the B.P.

Golden Ointment

Hydrarg. oxidi levig.	ʒj.
Ceræ albæ	ʒij.
Adipis	ʒvj.

M.

This ointment is stimulant and escharotic, and is applied to indolent ulcers.

Singleton's golden ointment was supposed at one time to be citrine ointment, while it has also been alleged to be a compound of orpiment and of yellow oxide of mercury. The late R. J. Downes examined it (*C. & D.*, 1877, p. 139) and found that the contents of the pot weighed exactly 56 gr., and, having dissolved off the fat with bisulphide of carbon, he obtained a red granular and crystalline powder weighing 6·7 gr., or 12 per cent. This he proved to be levigated red oxide of mercury. His observation has been confirmed by other chemists.

Ung. Hamamelidis

(E. W. Lucas's Improved)

Ext. hamamelid. liq.	ʒij.
Ext. hamamelid. dest.	ʒij.
Adipis lanæ anhyd.	ʒiss.
Paraffini mollis	ʒj.

M.

Hæmorrhoidal Ointments

(syn. *Pile-ointment*)

I

Acid. tannic.	℈j.
Bismuth. subnit.	ʒj.
Pulv. opii	gr. x.
Paraffin. mollis	ʒj.

M.

II

Pulv. gallæ	ʒiiss.
Pulv. plumbi acet.	ʒiiss.
Ext. belladonnæ	gr. iv.
Ung. camphoræ	ʒj.
Vaselini	ʒj.

Fiat unguentum.

III

Hamamelini	ʒj.
Tannini	ʒss.
Pulv. opii	gr. xij.
Ung. paraffin.	ʒj.

M.

P.F. 17

Ung. gallæ c. opio, ung. acid. boric., ung. carbol., partes æquales cum camphor. gr. x. ad ʒj.

P.F. 18

Calomelanos	ʒiv.
Chloretoni	ʒiv.
Hydrastinæ	ʒij.
Hamamelini	ʒij.
Adipis benzoatis, Lanolini	aa. ʒviij.

Fiat unguentum.

Ung. Hydrargyri Oleati, Br.P.C.

Oleate of mercury	ʒj.
Simple ointment	ʒj.

Mix without heat.

Healing-ointment

P.F. 13

Vaselini	℥xxiv.
Ceræ albæ . . .	℥vj.
Ol. flavæ conc. . .	℥j.
Tr. calendulæ . . .	℥j.
Acidi carbolici . .	℥ss.

Fiat unguentum.

Ung. Hydrargyri Oxidi Flavi

(Pagenstecher)

Hydrarg. oxid. flav.	℥ss. vel ℥j.
Ung. cetacei . . .	℥j.

Misce exactissime et fiat unguentum.

N.B.—*See* observations below.

The last formula is the original prescription of Dr. Alexander Pagenstecher, published in 1865. It is rarely used in England, the formula preferred being one consisting of the yellow oxide gr. viij. to ℥ss. to vaseline ℥j. Previous to this becoming known in England, the late Mr. Balmanno Squire, M.B., &c., communicated a paper to the Pharmaceutical Society in March 1865 (*P. J.*, 2, vi., 512), advocating the superiority of the yellow oxide of mercury over the red oxide for making ointments. According to Professor H. Pagenstecher, M.D., nephew of the introducer (*C. & D.*, 1898, I., 53), his uncle began to use the yellow oxide in 1856, on the suggestion of Apotheker Hofmann, of Wiesbaden, who recommended the freshly precipitated oxide in place of red oxide previously used by Dr. A. Pagenstecher (*P. J.*, 2, vii., 324). This original ointment is still prepared by Hofmann's successors, and none appears to equal it in fineness of comminution. This is stated to be secured by precipitation of the oxide in large volumes of liquid, the whole of the process being conducted in a dark room. After the last trace of a chloride reaction has vanished from the wash-water, the water in the precipitate is replaced by alcohol, then by ether and alcohol, and finally by ether. After draining off as much of the ether as possible, the still wet precipitate is mixed with the basis and the ether completely removed by gentle heating. (*See* the observations by Dr. W. Harrison Martindale in the Supplementary Chapter.) Spermaceti ointment is used, but it is intensely irritating to the eyes (Darwin found the same with sensitive plants), and Dr. Pagenstecher's recommendation was really for cold-cream *minus* the water.

Ung. Hydrargyri Co. (Startin)

Hydrarg. ammon. chlor. .	℈ss.
Plumbi acetatis . .	℈ss.
Zinci oxidi . . .	ʒj.
Ung. hydrarg. nit. . .	℈j.
Adipis	ʒss.
Ol. palmæ . . .	ʒss.

For chronic eczema.

Ung. Hydrarg. Mitius, Br.P.C.

A mixture of B.P. ointment 1 oz. and lard 2 oz.

May be sold as Milder Mercurial Ointment or Blue Ointment for pediculi. 'Blue ointment' is well understood by the public to mean this weaker preparation, which was formerly official, and is the name given by the U.S.P. to *Ung. Hydrarg. Dil.* In Dickins *v.* Randerson (*C. & D.*, 1901, I., 204) it was held that 'Mercury Ointment' is the B.P. article unless a different strength is prescribed by the medical practitioner.

Ung. Hydrarg. Nit.

According to Mr. E. W. Lucas (*Phar. Jour.*, 4, iv., 121), Messrs. John Bell & Co.'s method of making this ointment is:—

Dissolve the mercury in the nitric acid without the aid of heat, agitating gently from time to time. Melt the lard in the oil and raise to a temperature of about 380° F. Pour into an earthenware vessel, previously made hot, capable of holding ten times the quantity, and when the mixture has fallen to about 350° F. add by degrees the cold mercury solution, stirring briskly with a wooden spatula to promote disengagement of the fumes. Keep stirred until cold.

These directions have been adopted by the B.P. Squire's modification yields uniformly an ointment of good consistence and lemon colour, remaining so for months. Use the B.P. quantities of materials, but dissolve the mercury in the nitric acid (cold). Heat the lard and oil on a water-bath, and when melted and at a temperature of 180°–190° F., add the cold mercury solution, stirring continuously. When effervescence commences continue the heat for ten minutes, then remove from the water-bath and stir till cold.

Ung. Hydrarg. Sulphat. Flav.

Hydrarg. sulphat. flav. .	ʒj.
Adipis benzoat. . .	℥iv.

Ung. Ichthyol. (Unna)

Ammon. ichthyolat. .	ʒi.
Aquæ destillatæ . .	ʒj.
Adipis benzoat. . .	ʒiij.
Lanolini anhydros. . .	ʒv.

Salicylated ichthyol ointment contains salicylic acid ʒss. to ʒiss. in addition to the above. The ichthyol should be rubbed down with the water before adding the fats.

Ung. Ichthyol. Co., C.F.

Ichthyolis . . .	ʒj.
Liq. calcis . . .	℥iv.
Adipis lanæ . . .	ʒv.
Paraffin. mollis . .	ʒv.
Ung. zinci oxidi . .	ʒiiss.

Triturate the ichthyol with the lime-water, add the wool-fat gradually, mixing well, then the other ingredients.

Ung. Iodi Denigrescens, C.F. and B.P.C.

(*Non-staining Iodine Ointment*)

Iodine	ʒj.
Soft paraffin . . .	ʒxix.

Powder the iodine, melt the paraffin by heat, add the iodine, and continue to heat the mixture, stirring until the iodine is combined. Remove the heat, and stir the preparation until it congeals.

Itch-ointment

Hydrargyri perchloridi	gr. xvj.
Pulv. ammonii chloridi	gr. xvj.
Hydrargyri ammoniati	℈ij.
Plumbi acetatis	℈ij.
Sulphur. præcipitat.	ʒij.
Hydrarg. sulphurat.	q.s.
Adipis benzoati	ʒxvj.

Triturate the powders together with sufficient vermilion (ʒj.) to impart a pink tint to the ointment, then work in the benzoated lard gradually to produce a smooth preparation. Perfume with oil of lavender and ess. bouquet.

Directions.—To be applied at bedtime, and after washing in the morning.

P.F. 2

Ung. sulphur.	ʒx.
Ung. sulphur. viv.	ʒx.
Acidi carbolici odorat.	ʒj.

Ung. Lanolini (Helbing)

Lanolin. anhydros.	ʒviss.
Paraffini liquidi	ʒiij.
Ceresini	ʒss.
Aquæ	ʒiij.

Melt the ceresin in the paraffin by heat, and mix with the lanoline and water.

Ung. Leniens

(syn. *Ung. Aquæ Rosæ, B.P.; Ceratum Galeni; Cold-cream*)

I

Ceræ albæ puræ	ʒiss.
Cetacei	ʒiss.
Ol. amygdalæ	ʒx.

Melt, pour into a warm jar, and add otto rosæ ♏xx.; also, gradually, constantly stirring

Aq. rosæ	ʒx.

II. Unna's

Adipis benzoat.	ʒviij.
Olei benzoat.	ʒiv.
Lanolin.	ʒiv.
Aq. rosæ	ʒiv.
Aq. flor. aurantii	ʒij.

Mayer's Ointment

(Eclectic Dispensatory)

Olive oil	2½ lbs.
Gum thus	½ lb.
Beeswax	4 oz.
Fresh butter	4 oz.
Red-lead	1 lb.
Honey	12 oz.
Powdered camphor	½ lb.

The mixture of olive oil, beeswax, gum thus, and butter should be heated in an iron vessel, four times the capacity of the ingredients, over direct fire until it effervesces, when red-lead is added cautiously, a tablespoonful at a time, and well stirred after each addition, the red colour changing to brown quickly if the temperature is high enough. After the reaction is completed, and the mixture is cool enough to receive the honey without violent effervescence, it should be added and stirred well to evaporate the water. Lastly, when the mixture is cool enough to dissolve the camphor without vaporisation it is added and dissolved.

In the United States 'this forms a superior salve, and is useful for all ulcers, cuts, wounds, &c. It has been kept a great secret for a length of time among the foreign population of the country, and is highly prized by those who have used it.'

Ung. Metallorum

Ung. plumbi acetat.	ʒj.
Ung. hydrarg. nit.	ʒj.
Ung. zinci oxidi	ʒj.

Ung. plumbi subacet. is sometimes used, but the formula here

given is the one more generally adopted.

The title is used as a synonym for *Ung. Hydrarg. et Plumbi et Zinci*, B.P.C., which is St. Thomas's Hospital formula.

Ung. Naphthalini Co.

*For Eczema and Psoriasis

Naphthalin.	ʒij.
Acid. benzoic.	ʒj.
Acid. borici	ʒj.
Vaselini c. cerâ flav. (3–1)	ʒij.
Bals. peruvian.	ʒj.
Tr. benzoini	ʒij.

Ung. Naphthol. (Kaposi)

Naphthol.	ʒj.
Adipis	ʒj.

Ung. Naphtholis, B.P.C., is 1 and 9.

Ung. Nervinum
(*Ung. Rosmarini Co.*)

Melt together lard ʒij., suet ʒj., yellow beeswax ʒij., oil of mace ʒij., and add ʒj. each of oils of juniper and rosemary.

Neuralgia-ointment

Chloroformi	ʒj.
Lanolini	ʒvij.

Nipple-ointments

I

Tannin.	ʒj.
Bismuthi subnit.	ʒij.
Vaselini	ʒxxx.

Mix intimately.

Directions.—The nipples to be well smeared with this, and kept so while the child is not nursing. The nipple to be carefully cleansed before the child is applied.

II. Black's Cerate

Black resin	ʒix.
Yellow wax	ʒv.
Pitch	ʒss.
Linseed oil	ʒviij.

Melt together. When somewhat cooled pour into a soaped pudding-tin, and when cold turn it out and cut with a sharp knife into suitable-sized pieces. Wrap each in paraffin-paper for sale.

Ung. Ophthalmicum

Hydrarg. oxid. flav.	℈iv.
Hydrarg. sulph. rub.	gr. xv.
Vaselini	ʒvj.
Paraffin. dur.	ʒj.

Ung. Opii

Ext. opii	ʒj.
Aq. destillat.	ʒss.
Glycerini	ʒss.

Rub together until smooth, then mix with

Ung. simplicis	ʒj.

Ung. Paraffini, P.G.
(syn. *Unguentum Durum*)

Ceresin	4 parts
Liquid paraffin (sp. gr. 0·885)	5 parts
Wool-fat	1 part

Ung. Picis Co., N.F.

Oil of tar (from wood tar)	4 parts
Tincture of benzoin	2 parts
Zinc oxide	3 parts
Yellow wax	25 parts
Lard	32 parts
Cotton-seed oil	35 parts

Melt the yellow wax and lard with the cotton-seed oil at a gentle heat. Add the tincture of benzoin, and continue heating until all the alcohol has evaporated. Then withdraw the heat, add the oil of tar, and finally the oxide of zinc, incorporating the latter thoroughly, so that on cooling a smooth, homogeneous ointment may result.

Ung. Plumbi Albi, Ph.E.
(syn. *Anguentum; Anguintum; White Ointment*)

White-lead	1 part
Simple ointment	5 parts

Pruritus-ointment (Bulkley)

Pulv. camphoræ	ʒj.
Chloral. hydratis	ʒj.
Ung. aquæ rosæ	ʒj.

Ung. Resinæ Acidum

(Manchester Infirmary)

	Summer	Winter
Yellow resin	ʒiv.	ʒiv.
Yellow wax	ʒxx.	ʒx.
Olive oil	ʒxx.	ʒxxx.
Venice turpentine	ʒviij.	ʒviij.
Burgundy pitch	ʒiv.	ʒiv.
Oxide of zinc	ʒiv.	ʒiv.
Solution of carbolic acid	ʒxss.	ʒxss.

Mix all the ingredients together except the last two. Rub the oxide and solution together, and add to the resinous mixture gradually, stirring well.

Sol. acid. carbol. is a mixture of carbolic acid ʒviij., glycerine ʒiv., and water ʒxvj.

Ung. Resorcin. Co.

I. Unna

Resorcin	gr. lxxv.
Ammon. ichthyolatis	gr. lxxv.
Acidi salicylici	ʒss.
Ung. simplicem ad	ʒij.

II. B.P.C.

Resorcin	140 gr.
Distilled water	140 gr.
Bismuth subnitrate	140 gr.
Zinc oxide	140 gr.
Birch-tar oil	70 gr.
Wool-fat	560 gr.
White soft paraffin to	4 oz.

Dissolve the resorcin in the water, and mix with the other ingredients.

Ung. Rosæ Alb., B.P.C., is a cold-cream, and *Ung. Rosatum*, B.P.C., is Rose Lip-salve (alkanet 3, white wax 1, otto of rose 0·2, lard 100).

Ringworm-ointment

I. Malcolm Morris

Acid. chrysophanic.	℈j.
Ol. deelinæ	ʒij.
Lanolin. ad	ʒj.

Fiat unguentum.

II

Acidi carbolici	ʒiv.
Sulphur præcip.	ʒij.
Pulv. hellebor. alb.	ʒj.
Potass. nitratis	ʒss.
Saponis mollis	ʒiv.
Paraffini mollis	ʒxvj.
Paraffini duri	ʒij.
Ol. rosæ geranii	♏xij.
Ol. bergamottæ	♏xv.

Ung. Rubrum Balsamicum

(*Spkerbalsam*)

White wax	25 parts
Sesame oil	36 parts
Venice turpentine	36 parts

Melt together and add powdered red sanderswood 3 parts, digest for half an hour, strain; when nearly cold add Peruvian balsam 3 parts, and mix.

Ung. Rubrum Sulphuratum

(syn. *Lassar's Red Salve*)

Vermilion	ʒss.
Sublimed sulphur	ʒxiiss.
Petroleum jelly	ʒxxv.
Oil of bergamot	ʒss.

Russell's Ointment

Zinci sulphatis	ʒss.
Plumbi acetatis	ʒj.
Hydrarg. oxidi rubri	ʒj.
Mellis	ʒij.
Cetacei	ʒj.
Ceræ flavæ	ʒj.
Adipis	ʒij.

Fiat unguentum.

Ung. Sambuci Viride

Fresh elder-leaves	lb. iv.
Mutton suet	lb. j.
Lard	lb. viij.

Boil until the leaves are crisp and all the water is dissipated, leaving the fats clear; then strain.

Ung. Staphisagriæ
Pro Pediculos.

Ol. staphisagriæ	℥j.
Ol. rosæ geranii	♏x.
Paraffin. dur.	℥ss.
Paraffin. moll.	℥viss.

Ung. Stramonii, U.S.P. and B.P.C.

Stramonium extract	10 grams
Diluted alcohol	5 ,,
Hydrous wool-fat	20 ,,
Benzoinated lard	65 ,,

Rub down the extract with the alcohol, and mix in the fats.

Ung. Sulphuris Comp.
I

Sulphur. vivi	℥viij.
Potass. nitrat.	℥j.
Pulv. veratri albi	℥j.
Saponis mollis	℥viij.
Ol. bergamottæ	℥ss.
Acid. carbolic.	℥ij.
Adipis recentis	℥xxiv.

Mix the lard and soap, and incorporate the sulphur and hellebore with the mixture, then add the nitre dissolved in a little water, and, lastly, the bergamot.

II. C.F.

Cretæ præcipitatæ	℥j.
Sulphur. sublimat.	℥iss.
Ol. cadini	℥iss.
Saponis mollis	℥iij.
Adipis	℥iij.

Synonyms same as Ung. Cadini, *q.v.*

For B.P.C. formula *see* p. 810.

Ung. Sulphuris c. Potassa
(Helmerick's)

Sulphur. præcip.	℥ij.
Potass. carbonat.	℥j.
Hydrarg. sulph. rub.	gr. ij.
Aq.	℥j.
Ol. bergamottæ	♏ij.
Adipem ad	℥j.

Rub the first four ingredients, incorporate the lard, and perfume with the bergamot.

Ung. Sulphuris c. Hydrarg., N.H.

Sulphuris sublimat.	℥ss.
Hydrargyri ammoniat.	gr. v.
Creosoti	♏iv.
Olei olivæ	℥ij.
Adipis	℥j.

Ung. Sulphur. Hypochlorit. Co.
(Erasmus Wilson)

Sulphur. hypochlorit.	℥ij.
Potass. carbonat.	gr. x.
Adipis	℥j.
Ol. amygdal. essent.	♏x.

Fiat unguentum.

Ung. Suprarenalin. et Cocainæ, B.F.

Suprarenalin	gr. ss.
Boric acid	gr. j.
Cocaine hydrochloride	gr. v.
Distilled water	♏xv.
Hydrous lanoline	℥iv. gr. x.
Vaseline	℥iv. gr. x.

Dissolve the first three ingredients in the water and mix with the lanoline and vaseline.

Contains suprarenalin 1 in 1,000, and cocaine hydrochloride 1 in 100.

Ung. Adreninæ, B.P.C., is this without cocaine.

Ung. Wilsonii

Wilson's zinc salve is the name given on the Continent and in D.A.V. to benzoated zinc ointment, 1 in 5.

Ointment-basis
(H. Forster)

Equal parts of lard, anhydrous wool-fat, and soft paraffin. Melt together, strain, and allow to cool without stirring.

Parenol, B.P.C., is soft paraffin ℥xiij., wool-fat ℥iij., warm distilled water ℥iv.

Vasolimentum, D.A.V.
(*Liquid*)

Alcoholic solution of ammonia (10 p.c.)	10
Purified oleic acid	30
Yellow liquid paraffin (sp. gr. 0·890 to 0·895)	60

Vasolimentum spissum, D.A.V.

Thick Vasoliment

Paraffin ointment	60
Purified oleic acid	30
Alcoholic solution of ammonia (10 p.c.)	10

Heat on a water-bath until a uniform mixture is produced, then evaporate the alcohol.

A yellow ointment, capable of taking up over twice its weight of water.

The following are D.A.V. combinations:—

Vasolim. Chloroformii camphoratum

Camphor, chloroform, and vasoliment, of each 10.

Vasolim. empyreumaticum

Oil of cade	25
Vasoliment	75

Vasolim. Eucalyptoli

Eucalyptol	20
Vasoliment	80

Vasolim. Hydrargyri

Mercury	40
Wool-fat	20

Triturate intimately, then mix with

Thick vasoliment	60

Vasolim. Ichthyoli

Ichthyol	10
Vasoliment	90

Vasolim. Jodatum

Iodine	10
Oleic acid	40

Dissolve and add

Yellow liquid paraffin	40
Alcoholic solution of ammonia (10 p.c.)	10

Vasolim. Jodoformii

Iodoform, powdered	3
Linseed oil	27
Vasoliment	70

Dissolve by heat. To deodorise add 3 p.c. of eucalyptol.

Vasolim. Kreosoti

Creosote	5
Vasoliment	95

Vasolim. Mentholi

Menthol	25
Vasoliment	75

Vasolim. Naphtholi

Naphthol	10
Vasoliment	90

Vasolim. salicylatum

Salicylic acid	10
Purified oleic acid	40
Yellow liquid paraffin	40

Dissolve by warming on a water-bath. When cold add

Alcoholic solution of ammonia (10 p.c.)	10

Vasolim. Sulfuris

Sulphur, well dried	3
Linseed oil	37

Dissolve by carefully heating; then add sufficient

Vasoliment to produce	100

Vasolim. Terebinthinæ

Turpentine	20
Vasoliment	80

Vasolim. Thioli

Liquid thiol	5
Vasoliment	95

Parogenum, B.P.C., is liquid paraffin 4, oleic acid 4, ammoniated alcohol (5 p.c.) 2; shake till clear. The solid is made by evaporating the alcohol. An imitation of *Vasogen Petroliniment* is white liquid paraffin 6, oleic acid 3, and ammoniated alcohol 1; shake. Ammoniated alcohol for the last is a mixture of 1 part of ammonia solution (30-per-cent.) and 2 parts of alcohol (90-per-cent.).

Venice Turpentine

I

Yellow resin	3 lbs.
Oil of turpentine	20 oz.

Melt the resin, remove from the fire, and add the oil of turpentine with constant stirring.

II

Resin. nig. pulv.	ʒxvij.
Ol. terebinth.	ʒviij.
Ol. lini	ʒxij.

Boiled linseed oil should be used.

Melt the resin and oil, and remove from fire, then stir in the turpentine.

VINA—WINES

These have already been dealt with in a previous chapter, but a few are given here which could not be included on p. 295.

Vinum aromaticum, D.A.V.
(*Gewürzwein*)

Aromatic herbs, Ph.G.	1
White arquebusade (i., p. 586)	2
Red wine	8

Macerate for eight days at 15° to 20° C.; press; filter.

Species aromaticæ, Ph.G.—Peppermint-leaves 2, wild thyme 2, thyme 2, lavender-flowers 2, cloves 1, cubebs 1.

Vinum Chinæ, Ph.G.

Cinchona-bark, coarsely powdered	20
Dilute alcohol (69 p.c.)	20
Hydrochloric acid (25 p.c.)	1
Sherry	500
Sugar	50

Mix the dilute alcohol, hydrochloric acid, and cinchona-bark, macerate for twenty-four hours; add the sherry, macerate eight days; press, add the sugar, and filter after eight days.

Vinum Chinæ ferratum, D.A.V.

Iron and ammonium citrate, Ph.G.	5
Citric acid	1
Cinchona-wine, Ph.G.	994

Dissolve without the aid of heat; after standing in a cool place for eight days, filter.

Vin. Colchici Sem., B.P.C.

Powdered colchicum-seeds	ʒij.
Detannated sherry	ʒxx.

Macerate for seven days.

Dose: ♏x. to ♏xxx.

Vin. Condurango, B.P.C.

Liq. ext. of condurango	ʒij.
Detannated sherry to	ʒxx.

Dose: ʒss. to ʒj.

Vinum diureticum, D.A.V.

Squill, finely cut.	10
Digitalis-leaves	10
Juniper-berries, bruised	60
Sherry	1,000

Macerate for eight days at 15° to 20° C.; press; add

Potassium acetate	2·5

Filter.

Vinum Ergotæ, B.P.C.

Liq. extract of ergot	ʒiv.
Alcohol	ʒj.
Detannated sherry to	ʒxx.

Dose: ʒj. to ʒij.

Vinum Kolæ, B.P.C.

Elixir of kola	ʒiiss.
Detannated sherry to	ʒxx.

Dose: ʒss. to ʒj.

Vinum Pepsini
I. A.Ph.F.

Pepsini (in scales) gr. cxxviij., glycerini ʒj., acid. hydrochlor. fort.

ʒss., vin. xericum ad ʒxvj. Mix the wine, glycerine, and acid, add the pepsin, and when dissolved add enough wine to make ʒxvj. Set aside for a week, and filter.

II. C.F. and B.P.C.

Pepsini . . .	ʒv. ℈j.
Acid. hydrochloric. .	ʒij.
Glycerini . . .	ʒj.
Vin. xericum ad . .	ʒxx.

Dissolve the pepsin in the mixed liquids.

See also Wines on p. 294.

Vinum Picis, N.F.

Wood tar . . .	100 grams
Water . . .	250 c.c.
Pumice in powder .	125 grams
Sherry 7 parts . }	of each a
Rectified spirit 1 part }	sufficiency

Wash the tar with the water and pour the water away. Add the pumice to the washed tar, mix, and stir in 1,000 c.c. of the fortified sherry (vinum album fortior, it is called). Continue to stir frequently during four hours, then filter through a wetted filter, washing the latter with the fortified sherry to 1,000 c.c.

Vinum Pruni Virginianæ, N.F.

Wild cherry in No. 40 powder . . .	250 grams
Sugar . . .	165 grams
Water . . .	200 c.c.
Alcohol (90-per-cent.)	100 c.c.
Purified talc . .	15 grams
Angelica wine to	1,000 c.c.

Dissolve the sugar in the water, moisten the wild cherry with sufficient of it, allow to macerate for an hour, then transfer to a percolator and percolate with angelica wine to 700 c.c. To this add the spirit and talc, and filter, returning the filtrate until it is bright, passing through sufficient wine to make 1,000 c.c.

The Ferrated Wine of Wild Cherry, N.F., is a mixture of tincture of citro-chloride of iron 80 c.c. with sufficient of the above to make 1,000 c.c.

Wine of Opium is made by macerating opium 1½ oz. in sherry 20 oz. for seven days and filtering. This is the preparation of the B.P. 1864, which is preferred by oculists on account of the absence of spices. The formula for vin. opii, which last appeared in the B.P. 1885, was as follows:—Extract of opium 1 oz., bruised cinnamon-bark 75 gr., bruised cloves 75 gr., sherry 1 pint. Macerate for seven days and filter. This preparation is preferred in cough-mixtures.

Trousseau's Wine.—The formula for this preparation is in the *Codex Français* 1884, its official title being 'Vin de Digitale composé de l'Hôtel-Dieu.' It is: Fol. digitalis pulv., 5 grams; rad. scillæ, 15 grams; bacc. juniperi, 75 grams; potass. acetatis sicc., 50 grams; vin blanc, 900 grams; alcohol. 90-per-cent., 100 grams. Bruise the squill and the juniper-berries, and macerate, together with the digitalis, in the mixed vin blanc and alcohol for six days, shaking from

time to time. Strain and press the mass. Dissolve the acetate of potash in the wine and filter. The usual dose is a tablespoonful twice or three times a day. The formula differs somewhat from the original of Trousseau, which contained 6·60 grams of squill and 13·20 grams of digitalis per litre.

BACTERIOLOGICAL AND MICROSCOPIC WORK
PREPARATIONS

WHERE specific weights or volumes are not mentioned in any of the formulas, the ingredients (fluids and solids) should be taken in grams.

Aniline-water

Aniline oil	5
Distilled water	100

Shake well and filter.

Beale's Carmine

Carmine	10 gr.
Strong solution of ammonia	½ dr.
Glycerine	2 oz.
Rectified spirit	½ oz.
Distilled water	2 oz.

Triturate the carmine with the ammonia, add the other ingredients in their order, and dissolve.

Bismarck Brown Solutions

I

Concentrated solution in glycerine and water equal parts.

II

Bismarck brown	2
Rectified spirit	15
Distilled water	85

Mix.

Bowhill's Flagella-staining Method

The solution required is:—

Orcein (saturated alcoholic solution about ten days old)	15 c.c.
Tannic acid (20-per-cent.)	10 c.c.
Distilled water	30 c.c.

Mix.

Capaldi and Proskauer's Method of Differentiating Typhoid and Colon Bacilli

I

Asparagin	0·2 per cent.
Mannite	0·2 per cent.
Sodium chloride	0·02 per cent.
Magnesium sulphate	0·01 per cent.
Calcium chloride	0·02 per cent.
Mono-potassium phosphate	0·2 per cent.

Mix.

II

Witte's peptone	2 per cent.
Mannite	0·1 per cent.

Mix.

Chenzinsky's Solution

Methylene-blue (saturated aqueous solution)	2½ parts
Eosin (½-per-cent. solution in 75-per-cent. alcohol)	1 part
Water	2 parts

Mix.

CULTURE MEDIA

Nutrient Broth

Take of beef-steak (freed from fat and connective tissue) 1 lb. Mince and macerate in 1,000 c.c. of water for twenty-four hours, boil for half-an-hour, strain through muslin, and express the marc in a tincture-press; add sodium chloride 5 grams and peptone 10 grams to the strained and expressed fluids, boil for five minutes, make up to 1,000 c.c. with water, neutralise with sodium-carbonate solution until red litmus is turned slightly blue, boil again for five minutes, if necessary neutralise again, and filter.

As there may be organic acids present which do not affect litmus, and it is essential that the broth should be neutral or slightly alkaline, it is advisable to standardise the broth. This is done as follows:—Take 25 c.c. of the broth, add 25 c.c. of water and 1 c.c. of phenolphthalein indicator, and ascertain its acidity with decinormal sodium hydroxide. This quantity (x) multiplied by 40 will be the quantity of decinormal sodium hydroxide required to render a litre of the broth exactly neutral when phenolphthalein is used as indicator. The optimum reaction is, however, 10 c.c. of normal sodium hydroxide short of neutralisation; therefore $40x-100$ of decinormal soda or $4x-10$ of normal solution is the right quantity to add to standardise the broth. This is known as +10 nutrient broth. It will be distinctly alkaline to red litmus-paper, and will probably be midway between neutral to litmus and neutral to phenolphthalein.

The rough method of adding alkali until red litmus is turned distinctly blue is commonly considered sufficient.

The nutrient broth is now run into clean flasks, plugged with cotton-wool, and sterilised.

Glucose Broth is nutrient broth with 1 or 2 per cent. of glucose added.

Glycerine Broth is nutrient broth with 6 or 8 per cent. of glycerine added.

Nutrient Gelatin

Nutrient broth	1,000 c.c.
Gelatin	125 grams

Heat on a sand-bath or in a 'steamer'; render alkaline and filter while hot (in the 'steamer'). If the filtrate is not quite clear add the white of an egg, boil thoroughly, and filter again. When perfectly clear pour it into plugged flasks or test-tubes and sterilise.

Glucose Gelatin is nutrient gelatin with 1 or 2 per cent. of glucose added.

Nutrient Agar

Nutrient broth	1,000 c.c.
Agar-agar	15 grams

Grind the agar as fine as possible and dissolve it by boiling in the broth. Filter in the steamer through a jelly-bag. Add the white of an egg to the filtrate, render slightly alkaline, and filter in the steamer. Run the clear fluid into plugged flasks or test-tubes and sterilise.

Glucose Agar is nutrient agar with 1 or 2 per cent. of glucose added.

Glycerine Agar is nutrient agar with 6 or 8 per cent. of glycerine added.

Blood Agar is made by smearing the surface of a sloped agar tube

with blood introduced on a platinum needle, and obtained with aseptic precautions from a prick of the finger. It is necessary to incubate for two days to be certain that the tubes are sterile.

Peptone-water

Peptone . . .	10 grams
Sodium chloride .	5 grams
Water . . .	1,000 c.c.

Dissolve by boiling, filter, and sterilise.

Blood-serum

The blood of an animal (sheep or ox) is received in a sterilised cylindrical vessel with aseptic precautions and allowed to coagulate. The clear serum which separates from the clotted blood is pipetted into clean sterile test-tubes, and the tubes are placed in a slanting position and steamed for an hour to coagulate the serum. Sterilise in the steamer for fifteen minutes on three successive days.

Loeffler's Serum

Blood-serum . . .	3 parts
1-per-cent. glucose broth .	1 part

Coagulate in slanted tubes and sterilise for fifteen minutes on three successive days.

Milk

Milk skimmed in a centrifugal machine is used. The skimmed milk is sterilised in the steamer for thirty minutes on three successive days. Litmus is often added to milk-tubes to indicate the change of reaction brought about by the growth of some micro-organisms.

Potato

Cylinders of potato are obtained from good specimens by means of a large cork-borer; they are then cut into two diagonally, and each half is introduced into a clean sterile test-tube, broad end down. A small plug of absorbent cotton-wool saturated with water should be placed in the bottom of the tube for the potato to rest upon and to prevent it from becoming too dry. Sterilise in the steamer for an hour.

De Rossi's Flagella-staining Method

The following special solution is required:—

Tannic acid . .	20 grams
Caustic potash (1-per-cent. solution) . .	10 c.c.
Ziehl-Neelsen's carbol-fuchsin, freshly prepared . . .	4–5 drops

Mix.

Durham's Flagella-staining Method

The solution required is:—

Stannous chloride (saturated solution) and tannic acid (15 per cent.) of each . . .	equal parts

A few drops of methylene-blue (saturated alcoholic solution) is added to each.

Ebner's Solution

Hydrochloric acid . .	0·5
Rectified spirit . .	100
Distilled water . .	20
Sodium chloride . .	5

Mix.

Ehrlich-Biondi Solution

(Heidenhain)

Orange G (saturated solution)	100
Rubin S (saturated solution)	200
Methyl green OO (saturated solution) . .	50

Mix.

For use, add to 1 part of above solution 100 parts of water.

Eosin Solution

I

Saturated alcoholic solution.

II

Eosin	5
Distilled water	100

Dissolve.

Farrant's Solution

Glycerine, water, and arsenious acid (saturated solution)	of each 1 part
Gum arabic	½ part

Formol-Alcohol

Formalin	1
Rectified spirit	9

Mix.

Friedländer's Capsule-staining Solution

Gentian violet (saturated alcoholic solution)	50
Distilled water	100
Acetic acid	10

Mix.

Stain the section in this solution, warm, for twenty-four hours. Rinse in acetic acid (1-per-cent.), pass through alcohol and xylol, and mount in balsam.

Fuchsin Solution

I

Saturated alcoholic solution.

II

Fuchsin	2
Rectified spirit	15
Water	85

Dissolve.

Gabbett's Solution

(For Staining Tubercle Bacilli)

I

Carbol-fuchsin solution.

II

Sulphuric acid (25-per-cent.)	100 c.c.
Methylene-blue	1–2 grams

Dissolve.

Gentian-violet Solution

I

Saturated alcoholic solution.

II

Gentian-violet	2·25
Distilled water	100

III

Gentian-violet (saturated alcoholic solution)	30 c.c.
Aniline-water	100 c.c.

Gibbes' Magenta Stain

Magenta	2
Aniline oil	3
Alcohol (s.g. 0·830)	20
Distilled water	20

Dissolve.

Gibbes' Solution

(For Double Staining)

Rosaniline hydrochloride	2
Methylene-blue	1

Mix in a glass mortar, and add slowly

Aniline oil	3
Rectified spirit	15

previously dissolved. Lastly add

Water	15

Gram's Iodine Solution

Iodine	1
Potassium iodide	2
Distilled water	300

Dissolve.

Grenacher's Alum-Carmine

Carmine	1
Alum (5-per-cent. solution)	100

Boil for twenty minutes, and filter when cold.

Grenacher's Borax-Carmine

Borax	2 grams
Carmine	5 grams
Distilled water	100 grams

Dissolve, and add acetic acid (5-per-cent.) until a red colour is produced. Set aside for twenty-four hours, filter, and add as a preservative 1 drop of phenol.

Hæmatoxylin Solution

Hæmatoxylin	2 grams
Rectified spirit	100 c.c.
Distilled water	100 c.c.
Glycerine	100 c.c.
Alum	2 grams

Mix and dissolve.

Hayem's Solution

(For Diluting Blood when Enumerating Red Blood-corpuscles)

Sodium chloride	2 grams
Sodium sulphate	5 grams
Mercury perchloride	0·5 gram
Distilled water	200 c.c.

Hiss' Medium

(For Differentiating Typhoid and Colon Bacilli)

I

Agar-agar	5 grams
Gelatin	80 grams
Extract of beef	5 grams
Sodium chloride	5 grams
Glucose	5-10 grams
Water	1,000 c.c.

The reaction is corrected so that it requires 15 c.c. of normal caustic soda to a litre to bring it to phenolphthalein neutral point.

II

Agar-agar	10 grams
Gelatin	25 grams
Extract of beef	5 grams
Sodium chloride	5 grams
Glucose	10 grams
Water	1,000 c.c.

The acidity should be such as to require 20 c.c. of normal caustic soda to a litre to neutralise, using phenolphthalein as indicator.

Iodine Solution

Iodine	1 gram
Potassium iodide	2 grams
Distilled water	50 c.c.

Dissolve.

Klebs' Glycerine-Gelatin

Best well-washed gelatin 10; cover with distilled water to swell the gelatin, pour off excess of water, melt with a gentle heat, and add glycerine 10. Lastly, add a few drops of phenol for preservation.

Kleinenberg's Solution

Picric acid (saturated aqueous solution)	100 grams
Sulphuric acid	2 grams
Distilled water	300 grams

Mix.

Koch's Methyl-violet

Methyl-violet (saturated alcoholic solution)	11
Aniline-water	100
Absolute alcohol	10

Mix and dissolve.

Koch's Methylene-blue

Methylene-blue (saturated alcoholic solution)	1
Caustic potash (10-per-cent. solution)	2
Distilled water	200

Mix.

Kühne's Methylene-blue

Methylene-blue	1·5 gram
Absolute alcohol	10 c.c.
Carbolic acid (1-20)	100 c.c.

Mix.

Kühne's Silica Jelly

I

Ammonium sulphate	0·4 gram
Magnesium sulphate	0·05 gram
Calcium chloride	a trace
Distilled water	50·00 c.c.

Dissolve.

2

Potassium phosphate	0·1 gram
Sodium carbonate .	0·75 gram
Distilled water .	50·00 c.c.

Dissolve.

These two solutions are to be sterilised and mixed.

3

Pour sodium or potassium silicate solution into dilute hydrochloric acid, and dialyse until no silver-nitrate reaction is obtained in the outer vessel. Concentrate by boiling until on cooling a little of the solution and mixing with a third of the mixed solutions 1 and 2 it readily gelatinises.

Laveran's Staining Method for Trypanosoma

(1) Saturated watery solution of methylene blue in which some freshly precipitated silver oxide has been shaken up occasionally for a fortnight. To obtain the silver oxide precipitate it from silver-nitrate solution with sodium hydroxide and wash thoroughly.

(2) Watery solution of eosin 1 in 1,000.

(3) Watery solution of tannic acid 5 per cent.

For use mix (1) 1 part, (2) 4 parts, and distilled water 6 parts.

Stain the blood-film (which has been previously fixed in alcohol ten minutes) in this solution for five to twenty minutes, wash in water, and treat with (3) for five minutes; wash in distilled water, dry, clear with olive oil, wash with xylol, and mount in Canada balsam.

Loeffler's Methylene-blue

Methylene-blue (saturated alcoholic solution) .	30
Potassium hydrate (1–10,000) . . .	100

Mix.

Löwit's Flagella-staining Method

The following mordant is required:—

Tannic acid . . .	5 grams
Water	20 c.c.

Dissolve, filter twice, and to 10 c.c. add

Copper sulphate (saturated aqueous solution) .	5 c.c.
Fuchsin (saturated alcoholic solution) . .	1 c.c.

Mix.

McCrorie's Flagella-staining Method

(Morton's Modification)

I

Tannic acid . . .	1 gram
Potash alum . . .	40 c.c.
Distilled water . .	1 gram

Dissolve.

II

Night blue . .	0·5 gram
Absolute alcohol . .	20 c.c.

Dissolve, mix the two solutions, and filter.

The counter-stain is aniline-gentian violet.

Methyl-violet

I

Saturated alcoholic solution.

II

Methyl-violet . . .	2·2
Distilled water . .	100

Mix.

Methylene-blue

I

Saturated alcoholic solution.

II

Methylene-blue . .	2
Rectified spirit . .	15
Water	85

Mix and dissolve.

Muir's Capsule-staining Method

The fixative and mordant is:—

Mercuric chloride (saturated aqueous solution)	2
Tannic acid (20-per-cent. solution)	2
Potash alum (saturated aqueous solution)	5

Mix.

Muller's Fluid

Potassium bichromate	2
Sodium sulphate	1
Distilled water	100

Dissolve.

Neelsen's Solution

Fuchsin	1
Alcohol	10
Carbolic acid (5-per-cent. aqueous solution)	100

Dissolve.

Neisser's Stain

For differentiating diphtheria bacilli from similar organisms—the polar granules take the acid stain and the rest of the bacillus is counter-stained red with the eosin solution.

(1)

Methylene blue	0·5
Alcohol	10·0
Glacial acetic acid	25·0
Distilled water to	500·0

(2)

Eosin	1·25 gram
Distilled water	500·00 c.c.

Stain in (1) for ninety seconds, wash with tap-water; stain in (2) for five seconds, and wash with distilled water.

Nicolle's Carbol-Thionine Blue

Thionine (saturated solution in 90-per-cent. alcohol)	10 c.c.
Carbolic acid (1-per-cent. solution)	100 c.c.

Mix.

Orth's Lithium-Carmine Solution

Lithium carbonate (saturated solution)	100
Carmine	2·5

Mix and dissolve.

Orth's Piero-Lithium Carmine

Lithium carbonate (saturated solution)	100
Carmine	2·5
Picric acid (saturated solution)	2·3

Mix and dissolve.

Osmic-acid Solution

Osmic acid	0·5
Distilled water	100

Dissolve.

Pasteur's Fluid

I

Distilled water	300
Cane sugar	20
Potassium bitartrate	0·10
Ammonium bitartrate	0·05
Ammonium sulphate	0·15
Yeast ash	0·15

Dissolve.

II

Distilled water	1,000
Calcium lactate	22·5
Ammonium phosphate	0·075
Potassium phosphate	0·04
Magnesium sulphate	0·04
Ammonium sulphate	0·02

Dissolve.

III (Cohn's Modification)

Water	200
Ammonium tartrate	2
Potassium phosphate	1
Magnesium sulphate	1
Calcium tribasic phosphate	0·1

Dissolve.

IV (Simplified Form)

Water	100
Ammonium tartrate	1
Yeast ash	1
Cane sugar	10

Dissolve.

Peptone Bouillon

Water	1,000
Peptone	20
Sodium chloride	5
Pearlash	0·1

Dissolve by heat and filter through paper. The bouillon should be just alkaline.

Pitfield's Flagella-staining Method

Mordant

Tannic acid	1 gram
Distilled water	10 c.c.

Dissolve.

Stain

Alum (saturated aqueous solution)	10 c.c.
Gentian-violet (saturated alcoholic solution)	1 c.c.

Dissolve.

(Muir's Modification)

Mordant

Tannic acid (10-per-cent.)	10 c.c.
Mercuric chloride (saturated aqueous solution)	5 c.c.
Alum (saturated aqueous solution)	5 c.c.
Carbol-fuchsin	5 c.c.

Stain

Alum (saturated aqueous solution)	10 c.c.
Gentian-violet (saturated alcoholic solution)	2 c.c.

Ranvier's Picro-carmine Solution
(For Staining Histological and Pathological Sections)

(1)

Carmine	1 part
Distilled water	10 parts
Strong ammonia solution	3 parts

Mix.

(2)

Picric acid	2 parts
Distilled water	200 parts

Dissolve.

Add (1) to (2) in an open dish and allow to evaporate while exposed to strong sunlight until it is reduced to about half. Filter.

Stain sections about five minutes, absorb excess of stain with fragment of filtering-paper, and mount in Farrant's solution. To leave a little stain with the section is advantageous, as staining goes on after it is mounted.

Ribbert's Capsule-staining Solution

Water	100
Rectified spirit	50
Acetic acid	12·5

Warm, saturate with violet dahlia, and filter.

Stain for a few minutes. Wash, dry, and mount.

Romanowsky's Stain
(Used for Blood-films)

Solution A

Make a 10-per-cent. solution of medicinal methylene-blue and render alkaline by the addition of 0·5 per cent. of sodium carbonate. It is necessary before use that this solution should be heated for some time, and this may be conveniently done by leaving it in a tropical sun for two days or in a warm room for a week. To prevent the growth of moulds, 0·25 per cent. of formalin may be added. It is recommended

that after heating the solution should be allowed to stand for a week or two before use.

Solution B

A 1-per-mille solution of eosin extra BA in distilled water.

The solutions keep indefinitely. When fixed blood-films are to be stained, a portion of each of these solutions A and B is further diluted with water in the proportion of 1–25, and placed in a couple of graduated glasses.

An equal volume of each diluted solution is poured on to the cover-glass in such a way that the solutions come in contact with the blood-film at the moment of mixing. The reason for this is that the red dye produced by the mixing acts best at the moment of its production. It takes about half an hour for the staining to be done. If, on examination, the dye has not acted sufficiently, the film is returned to the solution. If the staining is too intense, washing with water effects the necessary decoloration.

Leishmann's Modification

consists in mixing the solutions A and B, collecting, washing, and drying the precipitate, and dissolving in pure methyl alcohol in the proportion of 0·15 per cent.

Roux's Blue Stain

(For Diphtheria Bacillus)

A

Violet dahlia	1
Rectified spirit	10
Distilled water	90

Dissolve.

B

Methyl-green	1
Rectified spirit	10
Distilled water	100

Dissolve.

Mix 1 of A with 2 of B.

Schulze's Solution

(Chlor-Zinc-Iodine)

Zinc	55 grams
Hydrochloric acid	150 c.c.

Dissolve and evaporate to syrupy consistence ; then add

Potassium iodide	6 grams
Iodine	0·075 gram

Dissolve.

Thoma-Zeiss Solution

(For Diluting Blood when Enumerating White Blood-corpuscles)

Acetic acid	1 gram
Distilled water	300 c.c.

The water may be tinged with methyl violet if desired.

Uschinsky's Fluid

Sodium chloride	5–7 parts
Calcium chloride	0·1 part
Magnesium sulphate	0·2–0·4 part
Di-potassium phosphate	2–2·5 parts
Ammonium lactate	6–7 parts
Sodium asparaginate	3–4 parts
Glycerine	30–40 parts
Water	1,000 parts

Mix and dissolve.

Van Ermengem's Flagella-staining Method

Boil the cover-glasses in a solution of

Potassium bichromate	60 grams
Sulphuric acid	50 c.c.
Water	1,000 c.c.

Then wash in water and keep in absolute alcohol.

The solutions required are as follows :—

Bain Fixateur

Osmic-acid solution (2-per-cent.)	1
Tannic-acid solution (10–25-per-cent.)	2

Mix, and to every 100 c.c. add

Glacial acetic acid	4–5 drops

Bain Sensibilisateur

Silver-nitrate solution 0·25–0·5 per cent.

Bain Reducteur et Reinforçateur

Gallic acid	5 grams
Tannic acid	3 grams
Potassium acetate (fused)	10 grams
Distilled water	350 c.c.

Dissolve.

Walsh's Method (Modified)

(For Staining Fungi Parasitic on Skin or Hair)

(1)

Aniline water (*q.v.*)	2 parts
Alcoholic gentian-violet (*q.v.*)	1 part

Stain for fifteen minutes. Blot.

(2)

Iodine solution (*q.v.*)	1 part
Hydrogen peroxide (10 vol.)	1 part

Apply for three minutes, wash, and decolourise in

(3)

Aniline oil	10 parts
Nitric acid	1 part

This takes about fifteen or twenty minutes. Then (4) wash in aniline oil, next in xylol; and (5) mount in Canada balsam.

Wedl's Orseille

Orseille (ammonia-free)	1
Absolute alcohol	20
Acetic acid	5
Distilled water	40

Dissolve.

The resulting liquid should be dark red.

Winogradsky's Fluid

Distilled water	1,000
Potassium phosphate	1
Magnesium sulphate	0·5
Sodium chloride, Iron sulphate, Manganese sulphate of each	0·010–0·020

Dissolve. To the finished solution add

Sugar	1–4 per cent.

Ziehl-Neelsen's Solution

Fuchsin	1
Absolute alcohol	10
Carbolic-acid solution (1 in 20)	100

Dissolve.

(Fraenkel's Modification)

Distilled water	50
Absolute alcohol	30
Nitric acid	20
Methylene-blue	to saturation

The methods of working in bacteriology were fully explained in a treatise published in *The Chemist and Druggist Diary* for 1902, which should be consulted by those who wish to pursue the subject.

SUPPLEMENTARY CHAPTER

No department of pharmaceutical manufactures has shown such remarkable change during recent years as that which is concerned with the production of toilet preparations for the skin. There has been a complete change in the character of the preparations in demand, some having become so popular as to oust old favourities.

MODERN SKIN-CREAMS

may be regarded as evolutions from older types, and embody ideas or qualities which generations of experience have proved to be correct, or which modern science has elevated from traditional empiricism. It has already been noted (p. 44) that cold-cream on the model of Galen's formula has held sway for centuries as the best cooling preparation, apart from lotions, for sensitive or inflamed skins. It is in certain respects the model of a class of toilet-creams free from the characteristic greasiness of Unguentum Galeni and other old-established skin-applications. Many of the newer creams are quite free from fat, and are thus correctly termed 'greaseless.' 'Skin-food is another favourite designation, because the cream, used as a massage-paste, nourishes and develops the tissues. Other types are rapidly absorbed, and these have been called 'vanishing cream' and 'rolling cream,' while the terms 'frozen snow,' 'witch-hazel foam,' and the like are applied to those preparations which present a pearly-white appearance and which, without being frothy, are, weight for weight, bulky as compared with fatty creams. It will be convenient to treat the preparations according to classes, and without special reference to the first chapter of this volume, to which these observations and formulas are supplementary.

Modified Cold-creams.—The typical ingredients of cold-cream are almond oil, white wax, spermaceti, and rose-water, the cooling property depending upon the evaporation of the rose-water imprisoned in the fat-globules. Such cold-creams do not keep well when exposed to the atmosphere, and the introduction of the paraffin bases soon resulted in their being used in place of animal or vegetable fats. The popularity of paraffin cold-cream is due to its beautiful appearance and keeping qualities. The simplest formula makes the best

—	I	II	III	IV	V	VI	VII	VIII	IX
White wax	1	½	1½	1½	1	1	—	—	—
Spermaceti	1	1	1½	—	—	—	—	—	—
Hard paraffin	—	—	—	—	1	—	(Lard)	½	—
Soft paraffin	—	—	9	—	—	—	2	7	—
Lanoline	2	3	—	—	—	—	2	2	2
Coconut oil	2	—	—	—	0·4	—	—	—	2
Almond oil	4	7	—	—	—	—	—	—	½
Liquid paraffin	—	—	—	6	5·4	6	—	—	—
Water	—	4⅔	—	2⅔	2	2	—	—	—
Orange-flower water	2	—	—	—	—	—	—	—	—
Rose-water	—	—	—	—	—	—	3	3	—
Tinct. benzoin	1	—	—	—	—	—	—	¼	⅛
Witch hazel	—	—	3	—	—	—	—	—	—
Glycerine	—	—	—	—	—	—	1	—	—
Borax	—	0·08	—	0·1	0·1	0·1	—	1/15	—
Boric acid	—	—	—	—	—	—	—	—	⅛

preparation. Spermaceti does not improve the cream, but a beautiful finish is given to paraffin cold-cream by the addition of a little ozokerite. The cream is poured hot into jars, and on cooling will be found to have a surface of great brilliancy. Spermaceti and white wax are the chief causes of rancidity, and the less of them used the better. Cocoa butter, coconut oil, and lanoline have also been extensively utilised. Sometimes the water is omitted, while borax or boric acid is commonly used as an antiseptic. Additional whiteness may be imparted by adding bismuth oxychloride, zinc oxide, or tincture

of benzoin. A tint is often imparted to the newer type of cold-cream—*e.g.*, pink or lavender—according to the perfume employed. Pink is used with a rose perfume, carmine or alkanet being employed for the colour, and lavender is obtained by means of a trace of methyl violet when the scent is of violets. Hydrogen peroxide, zinc peroxide, and sodium perborate have all been suggested as ingredients, but their value is problematical. With regard to perfume there is a tendency to employ synthetic odours, such as coumarin, heliotropin, and ionone, but oil of rose-geranium and otto of rose combined with one or more aromatic essential oils are still the favourites. The table on p. 834 embodies formulas which have been devised or recommended by modern specialists.

Gelatinous Creams.—Creams of the jelly type are made with such thickening agents as gelatin, isinglass, quince mucilage, Irish moss, tragacanth, and starch, or it may be a mixture of two or more of these. As a rule these creams are quite free from grease, and are easily rubbed into the skin; hence they are called 'greaseless' and 'vanishing' creams. Gelatin and isinglass were at one time largely used as a basis, particularly with glycerine, in the form of glycerine jelly, but this has gone out of fashion both in the United Kingdom and the United States, quince and tragacanth having taken their place, and examples of the new styles are given later. Quince-seeds contain about one-fifth of their weight of cydonin, a mucilaginous substance, and 1 part of the seeds with 40 parts of water should yield a thick jelly-like mass. Quince Mucilage is obtained by macerating quince-seeds in cold water (1 in 50) for two hours, and straining without expression; the decoction is made by boiling the same ten minutes. The seeds should be quite clean, the dirt being removed by rubbing in a cloth. Irish moss previously macerated in cold water for a quarter of an hour to wash away dirt, and boiled in water, 1 in 30, for ten minutes, yields a gelatinous mass. Powdered tragacanth makes a good basis for this class of creams, and it has the advantage of being easily prepared, but creams made with the best flake tragacanth have a translucency which is not obtain-

able with the powdered gum. Starch tumefied by boiling water is also employed, and it is quite common to combine tragacanth and starch, the result being an improvement on plain starch mucilage. In this type of skin-cream a preservative is necessary, suitable agents being glycerine, carbolic acid, boric acid, salicylic acid, and sodium benzoate. A pretty opalescent effect may be given by adding a minute quantity of fluorescein. One drop or so of solution of uranine is ample—too much spoils the fluorescence. Various ingredients are added to skin-creams of this type with the object of increasing the efficiency of the preparation. Thus, a little menthol gives a cooling effect, potassium chlorate and ammonium chloride are reputed to whiten the skin, while tincture of calendula and tincture of benzoin have distinct remedial action. The following are representative formulas of this class of skin preparations :—

Glycerine Jelly

'Brilliant' gelatin . .	ʒj.

Soak for twelve hours in

Triple orange-flower water	ʒxxiv.

Dissolve by the aid of heat, and add

Glycerine . . .	ʒxij.
Glycerine of borax . .	ʒxij.

Pour into bottles.

Witch-Hazel Jelly

Gelatin	ʒij.
Glycerine of starch . .	ʒvj.
Boric acid . . .	ʒj.
Distilled witch-hazel extract	ʒx.
Orange-flower water .	ʒj.
Oil of neroli . . .	ɱxx.

Soak the gelatin for twelve hours in the orange-flower water, then add the glycerine of starch and boric acid, and heat till the gelatin is dissolved; then add the other ingredients.

Toilet Jelly
(Raubenheimer)

Gelatin	ʒij.
Glycerine of starch . .	ʒvij.
Boric acid . . .	ʒss.
Distilled witch-hazel .	ʒix.
Orange-flower water .	ʒj.
Carbolic acid . . .	gr. xx.
Oil of neroli . . .	ɱxxv.

Soak the gelatin in one ounce of distilled extract of witch-hazel, add the glycerine of starch and the boric acid dissolved in the remainder of the witch-hazel, heating till the gelatin is dissolved; finally add the remaining ingredients and put up in collapsible tubes.

Quince Cream

Quince-seeds . . .	ʒiss.
Boric acid . . .	ʒss.
Salicylic acid . . .	℈j.
Glycerine . . .	ʒiss.
Eau de Cologne . .	ʒiv.
Water	ʒiv.

Make a mucilage with the quince-seeds before adding the other ingredients.

Cydonian Cream

Quince-seeds	ʒiij.
Glycerine of starch	ʒiv.
Boric acid	gr. viij.
Glycerine	ʒiv.
Rectified spirit	ʒvj.
Carbolic acid	gr. xx.
Oil of lavender	♏xl.
Water to	ʒxxxij.

Prepare in the same manner as quince cream.

Cooling Cream

(Cooban's formula)

Quince-seeds	ʒij.
Boric acid	gr. xxxij.
Starch	ʒij.
Carbolic acid	♏lxxx.
Glycerine	ʒxviij.
Rectified spirit	ʒxxiv.
Oil of lavender	♏lxxx.
Otto of rose	♏xx.
Essence of white rose	ʒij.
Tincture of benzoin	ʒss.
Water to	ʒcxlviij.

Dissolve the boric acid in some water, make a mucilage with the quince-seeds, straining without pressure. Prepare the glycerine of starch after the Pharmacopœia method, and when cold add the carbolic acid and the quince mucilage. Mix the perfumes and tincture of benzoin in the alcohol, add to the mixture of starch and quince mucilage, and strain if required.

NOTE.—The starch to use in this and other formulas is maize starch or cornflour.

Glycerine Cream

Starch	ʒvj.
Boric acid	ʒij.
Carbolic acid	ʒss.
Glycerine	ʒvj.
Distilled water	ʒxiv.

Mix the starch powder with an ounce of water, add the rest of the water, and bring to the boil. Dissolve the boric and carbolic acids in the glycerine and add the starch mucilage. Lastly, add any perfume desired.

Carrageen Cream

Mucilage of Irish moss (thick)	ʒiv.
Glycerine	ʒij.
Distilled witch-hazel	ʒj.
Eau de Cologne	ʒj.
Borax	ʒss.

Opal Cream

Powdered tragacanth	ʒij.
Oil of rose-geranium	♏xv.
Rectified spirit	ʒss.
Glycerine	ʒiij.
Water	ʒvj.

Dissolve the oil of rose-geranium in the spirit, and add to the tragacanth contained in a mortar; mix well, then add, all at once, the glycerine and water previously mixed, and stir until uniform.

Hazola Cream

Powdered tragacanth	ʒix.
Glycerine	ʒviij.
Rectified spirit	ʒv.
Tincture of benzoin	ʒj.
Oil of neroli	ʒss.
Oil of bergamot	ʒiss.
Oil of rose-geranium	ʒj.
Oil of almonds	ʒij.
Distilled water	ʒxlviij.

Rub the tragacanth with the alcohol, add the tincture of benzoin, then the glycerine and the oils, and lastly the water.

Cheap Face Cream

Boil half a gallon of soft water, and in it dissolve crystallised boric acid ʒss., and when nearly cold add tragacanth (best pale in flake and broken into small pieces) ʒij. Set aside for twenty-four hours, after which shake occasionally until a

smooth mixture is obtained. Strain through muslin and add the following mixture :—

Synthetic rose otto	ʒss.
Oil of lavender	ɱx.
Benzoic acid	ʒj.
Rectified spirit	ʒiij.
Glycerine	ʒvj.
Water to	ʒlxxx.
French chalk, finely levigated	ʒj.

Mix in the above order, shaking occasionally in the course of two days; then filter, and add to the borated tragacanth mixture.

Winter Fluid

Powdered tragacanth	ʒj.
Carbolic acid	ʒj.
Glycerine	ʒiij.
Oil of lavender	ɱx.
Oil of rose-geranium	ɱx.
Rectified spirit	ʒss.
Distilled water	ʒvj.

Dissolve the essential oils in the spirit and the carbolic acid in the glycerine. Mix the spirituous solution with the tragacanth in a mortar, add the mixed glycerine and water all at once, and stir till uniform.

Casein Skin-creams.—Casein, the chief albuminoid constituent of milk, has come largely into use as a base for greaseless skin-creams, and, inasmuch as the process is comparatively new, it may be well to give the method of manipulation somewhat in detail. Casein is precipitated from milk by acids or acid salts, and it forms, when freshly precipitated, a soft, light, finely divided mass which easily rubs into the skin. As it is soluble in solutions of the alkalies, alkaline carbonates, and borax, these ingredients must be avoided in preparing casein creams. The physical condition of casein depends on the temperature of precipitation, and on the concentration of the solutions from which it is precipitated. Some commercial varieties are granular, and hence unsuited for skin-cream purposes; the light, smooth variety is best. The usual precipitants are acetic acid, hydrochloric acid, tartaric acid, alum, and rennet, the last-named being the least suitable, as it alters the casein more than when chemicals are employed. Milk separated by the centrifugal process, or freed from fat by skimming off the cream, is the best to use, as retained fat becomes rancid after a time. The simplest process of precipitation consists in mixing separated milk with about ten volumes of water, warming to a temperature not exceeding 40° C., then adding acetic acid to make the liquid distinctly acid. The curd is collected on a cloth and well washed with water to which a little acetic acid has been added. If whole milk has

been used, it will be necessary to get rid of the fat: this can be done by dissolving the casein by means of an alkali, filtering, and re-precipitating. The following method has also been recommended as producing a more finely divided casein :—

Heat the milk to about 120° F. To each pint of milk add 2 oz. magnesium sulphate dissolved in 2 oz. of warm water, and set aside for an hour. Again heat to 130° F. or a little higher, and add 88 grains of alum dissolved in hot water, and, if necessary, continue the heat until the casein is entirely separated, being careful that the temperature does not rise to 145°. Wash the precipitate in several waters and press.

Casein creams have a tendency to shrink unless the jars are airtight. To prevent this a little cocoa butter is a good addition; almond oil is also used, but it makes the paste more greasy. The cream may be coloured with carmine solution, eosine, or carthamin. Boric acid is the most suitable preservative. Milling-machines are used in preparing these creams on a large scale, but trituration in a mortar *secundum artem* gives a good product. The following is a selection of formulas illustrating this type of skin-cream :—

I

Casein	ʒiij.
Boric acid	ʒv.
Cocoa butter	ʒiiss.
Carmine solution, Perfume	of each a sufficiency

The casein, prepared by the magnesium sulphate and alum method, is employed in the moist condition. The carmine solution, perfume, and boric acid are incorporated, and then the melted cocoa butter.

II

Skimmed milk	Cong. j.
Hydrochloric acid	ʒj.
Boric acid	ʒj.
Oil of bitter almonds	mxx.
Oil of rose-geranium	ʒss.
Oil of sweet almonds	ʒss.
Carmine solution	a sufficiency

Add to the milk 1 gal. of hot water to raise the temperature to about 80° F. Mix the hydrochloric acid with a pint of water, and add this to the diluted milk slowly, with constant stirring. Set aside for an hour, collect the precipitate on a cheese-cloth, and, after draining, return the mass to the vessel and add 2 gals. of water. Stir the coagulum, breaking up any masses that may form; pour off the water and wash again. Collect on strainer and squeeze out all the water possible, then transfer to a mortar or other suitable vessel and incorporate the boric acid. Transfer to a cheese-cloth bag, suspend in a suitable place for thirty-six to forty-eight hours, squeezing the bag occasionally. The casein is then placed in a mortar, rubbed as fine as possible, 1 oz. of dilute alcohol (enough to moisten) added, and then the oil of sweet almonds and perfume. Tint the product with solution of carmine. Add sufficient water to form a soft paste, and beat all together until uniformly mixed.

III

Skimmed milk	Cong. j.
Powdered alum	ʒj.
Boric acid	ʒiij.
Glycerine	ʒiij.
Oil of bitter almonds	♏xx.
Oil of rose-geranium	♏x.
Carmine solution	a sufficiency

Heat the milk to about 170° F. Dissolve the alum in 4 pints of hot water and add it to the milk slowly with constant stirring. Continue the heat and stirring until precipitation is complete. Let the mixture stand till cool, pour off the clear liquor, add to the precipitate 1 gal. of water, stirring and breaking up the magma as much as possible. Allow this to separate, pour off as much as possible of the water, collect the casein on a cheese-cloth strainer, squeeze out all the water possible, then dry between sheets of blotting-paper without artificial heat. Place the casein in a large mortar, add the glycerine in which the boric acid has been dissolved, and beat and rub the mass till it is perfectly smooth and soft. Set aside for six hours and pour off the water that separates, then beat in the oils and carmine, adding a little more glycerine if necessary to bring to the proper consistence.

IV

Skimmed milk	Cong. j.
Tartaric acid	ʒv.
Sodium benzoate	ʒss.
Zinc oxide	ʒj.
Glycerine	ʒij.
Carmine solution, Perfume	of each a sufficiency

Dissolve the acid in a pint of water and add to the warm milk. Strain and wash the coagulum. Rub the zinc oxide with the glycerine til perfectly smooth, and mix with the casein, adding lastly the perfume, colour, and preservative.

Sodium-stearate Skin-creams.—The basis of this type of cream is sodium stearate, prepared by the interaction of sodium carbonate and stearic acid. Sodium stearate is the main constituent of ordinary hard soap, but the advantage of making the stearate extemporaneously is that a more finely divided mass is obtained owing to the evolution of carbon dioxide. These new compounds are appropriately named Vanishing Cream, because they disappear when rubbed on the skin, leaving no greasy mark. They are apt to act upon the outer cuticle, and in some cases have induced severe eruptions. Commercial 'stearin' should not be used in making the creams; it is mainly stearic acid, which comprises about 46 per cent. of the fatty acids of tallow. 'Chemically pure' stearic acid is crystallised from alcohol, and is the article to employ. Pure stearic acid is official in the United States Pharmacopœia, where it is employed in the manufacture of glycerine suppositories, this process having, in fact, been adapted as the method for sodium-stearate skin-creams. The proper form of sodium carbonate to use is mono-

hydrated crystal soda, such as the 'Crescent' brand. Ordinary sodium carbonate contains ten molecules of water, and is used when indicated by *. If crystal soda is not obtainable, dried sodium carbonate, which is nearly free from water, may be substituted. The amount of alkali used is only about half of what is required for saturation of the acid to form normal sodium stearate, $NaC_{18}H_{35}O_2$, this being produced with two parts of stearic acid and one part of sodium carbonate, $Na_2CO_3,10H_2O$ (monohydrated 2 to 9 of acid). The normal stearate forms lustrous laminæ, a fact which suggests that the very pearly creams contain this, but the pearly appearance is induced by trituration. Instead of sodium stearate, potassium stearate, prepared by using potassium carbonate, is preferred by some pharmacists, but it is more greasy and less stable than the sodium salt. A disadvantage of this type of cream is the readiness with which the mass shrinks on keeping. To overcome this a portion of the water (not more than 5 per cent.) may be replaced with quince mucilage or tragacanth mucilage. A small amount of fat, such as cocoa butter, liquid paraffin, almond oil, wool-fat, or castor oil is sometimes added, with the object of obtaining the pearly appearance. The oil should not exceed 1 per cent. of the finished product, and it should be added to the stearic acid melted on a water-bath; add to this the sodium carbonate dissolved in hot water (two-thirds of the amount prescribed). When effervescence ceases on stirring, add the glycerine and any other water-soluble ingredients dissolved in the remainder of the water. At this stage the mixture may be whipped to form a foamy product, the perfume being incorporated at the same time; otherwise, when nearly cold add the perfume, set aside, and stir daily for a week in order to secure a satiny appearance. The following are formulas characteristic of this type, with variations in the method of compounding:—

Chicago Cream

Stearic acid . . .	ʒiv.	Heliotropin . . .	gr. v.
*Sodium carbonate . .	gr. 155	Otto of rose . . .	♏v.
Powdered borax . .	ʒss.	Rectified spirit . .	ʒj.
Glycerine . . .	ʒj.	Distilled water . .	ʒviij.
Oil of ylang-ylang . .	♏xx.		

Place the stearic acid, sodium

carbonate, borax, glycerine, and water on a water-bath and heat till effervescence ceases. Remove from the source of heat, and stir at intervals until the mixture begins to set. Then add the perfumes dissolved in the alcohol, and beat up with an egg-whisk. If the mass is not smooth enough, it should be beaten up again on the following day.

Hamamelis Cream

Stearic acid	ʒiiss.
Sodium carbonate	ʒiij.
Glycerine	ʒiij.
Solution of hamamelis, B.P.	ʒxij.
Water to	ʒxxv.

Place the stearic acid on a water-bath, and when it is melted add the sodium carbonate and glycerine dissolved in 2 oz. of hot water. Heat with constant stirring until effervescence ceases, add water to make the product weigh 13 oz., and finally the solution of hamamelis. Stir till smooth, heating a little if necessary, and beat to a foam in a warm mortar.

Stanislaus's Skin-cream

Stearic acid	30 grams
Oil of theobroma	5 grams
*Sodium carbonate	20 grams
Borax	5 grams
Glycerine	25 c.c.
Terpineol	2 c.c.
Oil of bitter almonds	2 drops
Otto of rose	15 drops
Rectified spirit	30 c.c.
Water	400 c.c.
Mucilage of tragacanth	100 c.c.

Place the ingredients, except the perfumes and alcohol, on a water-bath, and heat till effervescence ceases. Remove from the heat, and when the mixture begins to harden add the perfumes dissolved in the alcohol, and mix well. Allow it to harden, then warm and beat vigorously until a fluffy cream results.

Caldwell's Cream

Stearic acid	ʒxij.
Glycerine	ʒxij.
Water	ʒxxiv.
Potassium carbonate	ʒiv.
Borax	ʒiss.
Powdered tragacanth	ʒiv.
Perfume	a sufficiency

Place the glycerine in a water-bath, heat to 150° F., and add the tragacanth previously rubbed with a little alcohol. Next add the stearic acid, continue the heat until the acid is melted, and add the borax and the potassium carbonate, dissolved in hot water. Stir until the mass begins to set, and add the perfume.

Peroxide Cream

Stearic acid	ʒiij.
Sodium carbonate	ʒiiss.
Anhydrous wool-fat	ʒiv.
Glycerine	ʒiij.
Borax	ʒj.
Solution of hydrogen peroxide	ʒss.
Water	ʒxvj.
Perfume	a sufficiency

Prepare the mass as above, and when it begins to set add the hydrogen peroxide.

Rolling Cream

Stearic acid	ʒiv.
Glycerine	ʒiv.
Water	ʒxvj.
Potassium carbonate	ʒj.
Boric acid	ʒss.
Casein, soluble	ʒj.
Powdered tragacanth	gr. xv.
Kaolin	ʒiij.
Carmine solution, Perfume	of each a sufficiency

Prepare the mass as in making Caldwell's skin-cream, incorporating the kaolin before the cream begins to set. This form is used as a massage cream.

Those who desire the minimum of compounding may produce preparations similar to the stearate type with 'Crembas' or 'Cremogen'—paste preparations which take up ten times their weight of water, forming nice white creams. Considerable beating is required to get in ten parts of water, but a little perseverance with the beating suddenly surprises the operator by producing the cream. Distilled water should preferably be used; tap water of moderate degree of hardness entails double labour, and fairly hard water fails altogether to produce a cream. The following formulas illustrate the uses of these bases:

Vanishing Cream

(Non-sticky, non-greasy, and snow-white)

Crembas	ʒj.
Borax	gr. xij.
Distilled water	ʒv.

Melt the Crembas on a water-bath, add gradually the water in which the borax has been dissolved, beat into a cream, and perfume with otto of rose, essence of violet, lily of the valley, or any odour desired.

Face-massage Cream

Crembas	ʒj.
Borax	gr. xiij.
Water	ʒv. or ʒvj.
White vaseline	ʒj.
Otto of rose	♏v. to ♏x.

Proceed as for vanishing cream, having melted the Crembas and vaseline together.

Another

Liquid paraffin	ʒj.
Cremogen	ʒij.
Solution of hydrogen peroxide	ʒj.
Borax	℈ss.
Water	ʒviij.

Melt the Cremogen with the liquid paraffin and add the borax, dissolved in about one-third of the water (hot), stirring well. Now add the peroxide and the balance of the water in a thin stream, using a bone spatula for stirring.

Softening Cream

(For hands or face in cold, dry weather)

Crembas	ʒj.
Water	ʒv.
Glycerine	℈ss.
Essence of Parma violet	ʒj.
Borax	gr. xij.

Melt the Crembas and add the water with the borax and glycerine, beat to a cream, introducing the essence towards the end of the process.

The quantity of glycerine can be decreased if desired, but a larger proportion has a tendency to sweat out, and, apart from that, is quite unnecessary, as a small proportion suffices to keep the skin soft.

Spiced Acetic Acid

Ginger, pimento, and capsicums of each	½ oz.
Curry powder	1 oz.
Black pepper	2 oz.
Mustard-seed	4 oz.

Bruise all together and macerate for a day in

Acetic acid	16 oz.

Then add

Boiling water	3½ pints

Infuse for two hours and strain.

Acetylene Generators

Where the apparatus for generating acetylene by the interaction of calcium carbide and water is liable to be affected by freezing temperatures, the water in the generator may be mixed with alcohol, calcium chloride, or glycerine, which lower the freezing-point. A proprietary article known as 'Calcidum' is a concentrated solution of calcium chloride. The following statement shows to what extent each of the agents lowers the freezing-point of the liquid :—

Alcohol

			Freezes at
4	% solution	− 2·0° C. or	28·4° F.
11·3	% ,,	− 5·0° C. ,,	23° F.
20	% ,,	−10·6° C. ,,	13° F.

Calcium Chloride

10	% ,,	− 5·9° C. ,,	21° F.
16	% ,,	−12·2° C. ,,	10° F.
20	% ,,	−18·6° C. ,,	−1·5° F.

Glycerine

10	% ,,	− 1·0° C. ,,	30·2° F.
20	% ,,	− 2·5° C. ,,	28·5° F.
30	% ,,	− 6·0° C. ,,	21·2° F.

The same methods are used to prevent the freezing of the water in *motor-car condensers*.

Adeps Benzoatus

It is sometimes desired to benzoate lard extemporaneously, but it should be borne in mind that heating the lard with benzoin (1) destroys micro-organisms which may exist in it, and (2) antiseptic ises the fat thoroughly. Extemporaneous benzoating adds odour to the fat, but does not necessarily make it aseptic. Ol. benzoatum, P.F. p. 728, in the proportion of 1 to 50, benzoates fats well. A tincture is preferred by some. The French Codex formerly ordered 5 parts of tincture (1 in 5) to 1,000 of prepared lard, but now follows the B.P. method 30 of benzoin to 1,000 of lard. The German Pharmacopœia benzoates lard with 1 part of benzoin to 50 of lard heated on a water-bath for an hour.

Aërated Waters

(*Water-hardening Crystals*)

Potassium nitrate .	90 parts
Sodium chloride .	10 parts

Dissolve in water, evaporate, and allow to stand for crystals to form. Add 1 oz. to 2 oz. of the crystals to 30 gals. of water. The usual proportion of sodium or potassium bicarbonate is then to be added and the solution aërated. *Note.*—Useless for flavoured beverages, and objectionable in any water.

Alcohol from Sugar

Theoretically sugar dissolved in water in the proportion of 1 lb. to the gallon produces by fermentation 10·38 per cent. of proof spirit, but in practice (as when making ginger-beer) the quantity obtained approximates to 6·6 per cent. of proof spirit.

Hop-ale

I

Old hops . . .	3 lbs.
Bruised Jamaica sugar .	2 lbs.
Ground quillaia . .	1 lb.
Ground liquorice . .	1 lb.
Wormwood . . .	4 oz.
Boiling water . . .	116 gals.

Put the solids in a 120-gal. mash-tub provided with a false bottom and a tap beneath it. Pour on the boiling water, and allow to rest for eight hours. Then allow the liquor to run into a fermenting-vat containing—

Best cane sugar . .	80 lbs.
Caramel	1 lb.
Aurantine colouring .	1 oz.

Stir well until the sugar is dissolved, and make up to 120 gals. with water. When the temperature of the liquor is 70° F. add 3 lbs. of brewers' barm mixed with 2 gals. of a previous brewing. Mix well,

ferment for twenty-four hours, and skim off.

To clarify the ale, put 4 oz. of fine-cut isinglass into a quart jar, and fill it to three-fourths with boiling water. When dissolved, thin the isinglass jelly with 6 gals. of liquor from the vat, then put it into the vat, mix well, and set aside for twelve hours to clarify. Draw off into hogsheads, putting into each a handful of hops, and bung up.

In a few days the ale is ready to bottle. Only clean and dry bottles should be used, and the corks must be dipped in the ale before insertion.

2

Best hops . .	25 oz.
Crushed liquorice-root	7 oz.
Crushed Jamaica ginger	5 oz.
Salt	4 oz.

Bring 30 gals. of water to the boil and boil the above in it for half an hour. Strain and run the liquor into the fermenting-tub. Next add 10 lbs. of cane sugar, colour with caramel, and ferment.

3 (With Saccharin)

Best hops . .	20 oz.
Crushed liquorice-root	5 oz.
Crushed Jamaica ginger	3 oz.

Follow the directions given in No. 2, using 30 gals. of water, 5 lbs. of sugar, and 75 gr. of refined saccharin. Ferment in the usual manner.

For cask-trade it is usual to put a handful of hops into each cask before bunging down.

It is an excellent plan with many of these drinks after fermentation to rack into clean casks, and in ten days fine down, bottling in two or three weeks, according to condition.

Ants, to Destroy

If the nests can be located, carbon bisulphide poured into a number of holes in the ground near the nests is effectual, as also are boiling water and paraffin oil. Where the nests cannot be located, the ants may be trapped by moistening pieces of sponge with treacle and water, and when the sponge is covered immersing in boiling water. Borax is said to be fatal to ants, and may be added to the syrup. Arsenic is also used with syrup.

Anodyne

Morphinæ hydrochloridi ℈iv. gr. viiss.

Ext. belladon. liq. .	ʒss. ɱXL.
Tr. capsici . . .	ʒiv.
Ol. menth. pip . .	ʒj.
Ol. caryoph . .	ʒj.
Pulv. tragac. . . .	ʒiss.
Liq. scillæ pro syrup (1-7)	ʒiv.
Chloroformi . . .	ʒij.
Sacch. ust. . . .	ʒiv.
Æther. meth. . . .	ʒiiiss.
Aquam ad . . .	ʒxx.
Misce et adde	
Liq. ammon. acet. . .	Oij.
Syrupi	Ovj.

M.

Dose: Adults, one teaspoonful two or three times a day.

Anti-Catarrh

Ammon. carb. . .	ʒviij.
Camphoræ . . .	ʒij.
Pulv. carbo. lig. . .	ʒiij.
Ac. carbolic. . . .	ʒss.
Ol. eucalypti . . .	ʒss.
Terebeni . . .	ʒij.
Liq. ammon. fort. . .	q.s.

Aqua Calcis Composita

(Ph.D. 1826)

Ligni guaiaci . . .	ʒviij.
Rad. glycyrrhizæ . .	ʒj.
Cort. sassafras . .	ʒss.
Sem. coriandri . .	ʒiij.
Aquæ calcis . . .	ʒxcvj.

Macerate the solids (cut or

bruised) in the lime-water for two days, shaking occasionally, and strain.

Aqua Carminativa
(syn. *Gripe-drops*)

Olei anisi	♏x.
Olei anethi	♏x.
Olei menthæ piper.	♏v.
Glycerini	ʒx.
Aquam ad	ʒLx.

Dose: Ten drops to a teaspoonful, according to the age of the child, in sweetened water, the child sipping it.

Aqua Hostii

Ammonii chloridi	℈j.
Zinci sulphatis	℈iiss.
Spt. camphoræ	ʒiss.
Croci	gr. ij.
Aquæ	ʒviij.

Macerate for twenty-four hours, and filter.

Atrosogene

Pulv. rhei	ʒij.
Magnesii carbonatis	ʒiij.
Sodii sulphatis exsicc.	ʒiij.
Pepsini	ʒiij.
Bismuthi subnitratis	ʒv.
Sodii chloridi	ʒx.
Calcii carb. præcip.	ʒiss.
Sodii bicarbonat.	ʒviij.

Misce bene.

A German powder for intestinal affections.

Compound Balsam of Aniseed

Oil of aniseed	ʒij.
Chloroform spirit	ʒiij.
Ether	ʒiv.
Ipecacuanha wine	ʒiv.
Acetic acid	ʒiv.
Nitre	ʒiss.
Extract of malt	ʒj.
Extract of horehound	ʒiiss.
Honey	ʒss.
Extract of ginger	ʒj.
Treacle	ʒxij.
Caramel	sufficient to colour

Chest and Lung Balsam
225

Ext. glycyrrh. liq.	ʒvj.
Theriacæ	ʒvj.
Syr. tolut.	ʒvj.
Sacch. ust.	ʒiij.
Oxymel. scillæ	ʒiiiss.
Aq. anisi conc.	ʒj.
Chlorodyni (sine morph.)	ʒiss.
Aquæ	ʒiij.

(All by weight.)

One teaspoonful as required.

(*See also* Cough Mixtures.)

Cough-balsam
6

Tr. tolutanæ	ʒij.
Olei anisi	♏lxxij.
Olei menth. pip.	♏xlviij.
Pulv. tragac.	ʒij.
Theriacæ	lb. ij.
Ext. glycyrrhiz. liq.	ʒiss.
Acet. ipecac.	ʒvj.
Acet. scillæ	ʒx.
Syr. marrubii	ʒxij.
Chlorodyni	ʒiij.
Aquam ad	ʒlxxij.

ʒj. pro dose.

7

Ol. caryophylli	♏ij.
Ol. anisi	♏v.
Acid. hydrobrom. dil.	ʒij.
Syr. ipecacuanhæ	ʒiss.
Syr. scillæ	ʒij.
Spt. chloroformi	ʒiij.
Inf. lini c. glycyrrhiz. ad	ʒxvj.

ʒj. pro dose.

8

Ol. menthæ pip.	♏xv.
Ol. anisi	♏xx.
Spt. camphoræ	ʒij.
Oxymel. scillæ	ʒiv.
Syr. tolut., tussil., et marrub., et vin. ipecac.	aa. ʒij.
Tr. seneg. et ext. glycyrr. liq.	aa. ʒj.
Syr. scillæ ad	ʒxx.

Dose: Fifteen drops to ʒij.

No. 8 is also sold as *Aniseed Balsam*, *Coltsfoot Balsam*, and *Horehound Balsam*.

9

Chlorodyni	75
Acid. sulphuric dil.	75
Theriacæ	300
Aq. destill. ad	2,400

Ft. mistura.

Duret's Balsam

	Grams
Coal-tar	18
Oil of cade	15
Resorcin	2
Menthol	5
Guaiacol	5
Camphor	40
Sulphur	15
Borax	36
Glycerine	50
Acetone	80
Castor oil	40
Wool-fat	100

Dissolve the sulphur in the coal-tar, oil of cade, castor oil, and wool-fat by heating at 130° C. in a closed vessel, and after cooling to a thin cream add the other ingredients and intimately mix.

Balsam of Honey

231

Liq. ammon. acet. conc. (1-4)	ʒj.
Mellis	lb. j.
Succ. glycyrrhizæ	℥iij.
Theriacæ	lb. j.
Aceti scillæ	ʒx.
Ol. anisi	ʒj.
Vin. ipecac.	ʒij.
Aquam ad	ʒLX.

Balsam of Horehound

1

Vini ipecacuanhæ	ʒivss.
Liq. morphinæ hydrochl.	ʒivss.
Chlorodyni	ʒiij.
Syr. marrubii	ʒxxxvj.
Aquam ad	ʒlxxij.

5

Morphinæ acetat.	gr. xx.
Antim. tartarat.	gr. xl.
Chloroformi	ʒj.
Syr. marrubii	ʒxx.
Sacchar. ust.	q.s.
Syr. scillæ	ʒxl.
Aquam ad	ʒlxxx.

ʒj. t.d.s. ex aq.

Horehound Cough-balsam

Morphinæ acetatis	gr. xv.
Acid. sulphuric. dilut.	ʒij.
Spt. chloroformi	ʒiiss.
Ol. amygdalæ essent.	℥xl.
Syrupi rhœados	lb. iss.
Aquam ad	Oij.

Dose: One teaspoonful.

Bals. Mentholis Comp.

(*Baume de Menthol Composé*)

Wool-fat	ʒix.
Yellow wax	ʒiij.
Menthol	ʒiij.
Methyl salicylate	ʒij.
Water	ʒiij.

Melt the wax and wool-fat on a water-bath, add the menthol and methyl salicylate, stir and cover, and when creamy mix in the water.

Pectoral Cough-balsam

13

Tr. capsici	℥ij.
Tr. camphoræ co.	℥x.
Oxymellis scillæ	℥xx.
Glycerini	℥xx.
Syr. papaveris	℥xx.
Syr. tolutani	℥xx.
Vini ipecacuanhæ	℥x.
Tr. cocci	q.s.
Aq. chloroformi ad	ʒij.

Misce pro dose.

Samaritan Balsam, Ph. Espan.

Rosemary tops	ʒj.
Red wine	ʒx.
Olive oil	ʒx.

All by weight. Digest the whole together at a gentle heat until the wine is evaporated, then press, and strain the oily portion.

Barbers' Antiseptic

(For use as a spray after shaving.)

Boric acid	ʒss.
Tincture of quillaia	ʒss.
Bay rum	ʒij.
Glycerine	ʒj.
Burnt sugar	a sufficiency
Water to	ʒxx.

Dissolve the boric acid in the water without heat, then add the tincture, bay rum, and glycerine, and tint with burnt sugar. This is diluted, previous to use, with an equal quantity of water.

Pine Bath-powder

The basis of this powder is crystal sodium carbonate, 'Crescent' brand, tinted and perfumed with a mixture such as the following:

Pine oil	ʒij.
Terebene	ɱx.
Metanil	ɱv.
Lavender water	ʒj.

Spray the mixture on the sodium carbonate, allowing the excess of liquid to evaporate. These quantities are sufficient for several pounds of powder.

A Pine Bath Fluid is sold which is thick and brown like caramel. One drop of the liquid added to a basinful of water gives it a fluorescent sea-green colour. It is composed of solution of ammonia, pine perfume, glycerine, and uranite (an artificial colouring).

Bath Tablets are now made with dried sodium carbonate to which a small amount of an acid, such as tartaric acid, is added so as to produce a slight effervescence when added to water, and to assist in the solution of the solid, as the tablets are compressed hard. The tablets must be perfumed, preferably with a synthetic, and also tinted.

Varnish for Battery-jar Tops

Asphaltum	ʒx.
Elemi	ʒj.
Light coal-tar oil	ʒxij.

Make a solution and strain.

Non-excisable Beers

The following precautions should be observed in brewing the so-called non-alcoholic (strictly, non-excisable) beers—*i.e.*, fermented liquors containing not more than 3 per cent. of proof spirit, this being 1 per cent. permitted in excess of the legal limit:—

The casks or tubs used for brewing should be of oak, as other woods are liable to upset the beers.

Three casks with heads out are required. One of these should have a capacity of 12½ gals., the other two holding 100 gals. each. The small cask should have a tap about 1½ in. from the bottom; in the case of the larger casks the distance should be 2 in. (*Compare with* Ales, pp. 844-5.)

Good water is absolutely necessary, as it not only promotes a proper growth of yeast, but assists in producing a superior beverage.

The sugar used should be uncoloured cane sugar.

Use a good brand of compressed yeast, as a brisk fermentation in non-alcoholic drinks is advisable, and brewers' yeast cannot always be depended on.

Before fermenting put the yeast into an enamelled pan with a small quantity of the wort and whisk them well together, or (which is better) pour the liquid from one vessel to another, preferably from a height, as the aëration thus obtained is an advantage.

Yeast should be added at a temperature of between 65° and 80° F. The lower the temperature, the slower the fermentation. Usually 70° F. is most suitable.

Before adding the yeast see that the wort is well stirred up, so as to make the temperature equable throughout.

Keep the beer covered up, to prevent infection by spores of objectionable ferments which are always floating in the air.

Bottle the beverage in a cool place, but after bottling store the bottles upright in a moderately warm place.

Enter in a book full particulars of each brew. Also reserve a few bottles, and watch results.

Ginger-beer

Ginger, unbleached and crushed	7 lbs.
Cream of tartar	1 lb.
Tartaric (or citric) acid	1 lb.
Sugar	106 lbs.
Water	94 gals.
Dried yeast	a sufficiency

Put the crushed ginger into a loose canvas bag and place the bag in a 12½-gal. cask. Then pour over the ginger 10 gals. of boiling water, and stir up for half an hour to get as much flavour as possible out of the ginger. After an hour run off the water, through a V-shaped filter-bag tied to the tap, into a 100-gal. cask, in which the sugar has previously been placed. Next pour four separate 10 gals. of boiling water on the ginger, straining into the fermenting-cask as above—each infusion to occupy an hour. Well rouse the ginger as directed in the first infusion. Stir till the sugar is dissolved. Separately dissolve in hot water the cream of tartar and acid in an enamelled-iron or wooden vessel, and add the solution to the ginger infusion. Make up the bulk to 100 gals. with hot and cold water, so that a suitable fermenting temperature is obtained.

With Saccharin

Ginger, crushed	7 lbs.
Tartaric acid	12 oz.
Cream of tartar	8 oz.
Refined saccharin	1 oz. 2½ dr.
Sugar	44 lbs.

Macerate the ginger as in the above formula. Dissolve the saccharin in 2½ gals. of boiling water and add to the sugar in the fermenting-cask, making the liquor up to 100 gals. as directed above. Then ferment.

The proportion of dried yeast to be used in both formulas should be about 1 oz. to each 10 gals. in summer or 5 gals. in winter. The yeast should be placed on a slice of toast floated on some old beer for an hour before using. The surface of the beer should be skimmed, and undue fermentation retarded by the addition of a preservative, say, in from twenty-two to thirty hours, according to the temperature. The beer should be run through a filter-bag from the fermenting-cask for bottling, in order to get rid of yeast, which, if left in, might continue fermentation beyond the legal alcoholic limit. If a lemon flavour is desired, add to every 25 gals. the rinds (thinly pared) of three lemons, or 2 to 4 oz. of soluble essence of lemon.

From Gingerin

An extract for this purpose may be made as follows:

Gingerin	℥ivss.
Oil of ginger	♏x.
Essence of capsicum	℥iv.
Oil of lemon	♏L.
Terpeneless oil of lemon	♏v.
Rectified spirit	℥iss.

Dissolve and mix with

Powdered sugar	℥x.
Glucose	℥vj.
Potassium bicarbonate	gr. XLV.

This quantity is for a 50-gal. brew, the other ingredients needed being tartaric acid and cream of tartar, of each ½ lb., granulated sugar 40 lbs., and brewers' yeast ½ lb.

Horehound-beer

Horehound herb	2¼ lbs.
Powdered gentian	1 oz.
Chillies	2 dr.
Coriander-seed	1½ oz.
Powdered ginger	4 oz.
Liquorice	13 oz.
Sugar	10 lbs.
Caramel	1 oz.
Water	9 gals.

Boil the horehound, gentian, and chillies together for fifteen minutes

in 5 gals. of water, and strain on to the coriander, ginger, liquorice, caramel, and sugar; make up to 9 gals., and ferment.

Saccharin 70 gr. may replace half the sugar with advantage.

Spruce-beer

Bruised Jamaica ginger	4 lbs.
Cream of tartar	8 lbs.
Essence of spruce	2 pints
Cane sugar	100 lbs.
Water	95 gals.

Brew in the same manner as ginger-beer.

Beetle-powder

Borax	℥viij.
Bath brick	℥viij.
Powdered sugar	℥j.

Mix. Sprinkle the powder in the haunts of the insects.

Occasionally powders of this class contain unslaked lime and starch or flour. Lime is a better basis than Bath brick, but the mixture does not keep well.

Ferrous arsenate is one of the most effective poisons for beetles.

Belithion

Lithii salicylatis	℥ss.
Sodii hyposulphitis	℥ss.
Sodii sulphatis exsicc.	℥ss.
Potassii citratis	℥ss.
Potassii bicarbonatis	℥viij.

Misce.

Belting-syrup

For Lubricating Machinery-belts

Fish oil	2½ pints
Resin spirit	15 oz.
Tallow	1 lb.
Resin	1 lb.
Carnauba wax	14 oz.
Raw rubber	11 oz.

Digest the cut-up rubber and resin spirit in a closed iron vessel at 50° C. till solution has taken place, then add the resin and wax, stirring all the time. Next pour this mixture into the tallow and fish oil, previously melted together in another pan, and stir the whole until cool.

Warm the syrup before use, and spread on both sides in the case of a new belt, afterwards on the inside only.

Harness-makers' Black

Logwood in coarse powder	1 lb.
Galls in powder	½ lb.
Verdigris	1 oz.
Water	1 gal.

Boil together for two hours, cool, and strain. This is the blacking used by harness-makers for finishing the edges of leather. Some prefer copperas to verdigris.

Wax Finish

for the edges is made by mixing a pint of the hot blacking with a cream made from—

White wax	4 oz.
Brown sugar	8 oz.
Bone-black	8 oz.
Oil of turpentine	8 oz.

Melt the wax on a water-bath, add turpentine carefully, then the powders to produce a uniform paste.

Bird-seed

Canary-seed	90 parts
Rape-seed	5 parts
Linseed	1 part
Inga-seed	1 part
Egg-flake	3 parts

With a small proportion of millet and teazle seeds.

Bismuthated Magnesia

Bismuth. carb.	℥ss.
Sodii bicarb.	℥ij.
Magnes. carb. pond. ad	℥ij.

M.

Adult dose: Half a teaspoonful three or four times a day.

Blanchissine

French laundry preparations sold under this name are ammonia-and-turpentine compounds like the washing-liquors for which formulas

are given on p. 356. Sometimes a little benzin or vaseline is added, and ultramarine—about 3 per cent.

Laundry-blue

In making liquid blue from Prussian blue, oxalic acid is used with water as the solvent. Citric or tartaric acid in the same proportion as oxalic acid does equally well, and takes the blue out of the Poisons Schedule.

Gold paint

Mix 1 oz. of bronze-powder with one pint of any of the following:—

(1) Resin 1 oz., benzine 20 oz.
(2) Celluloid ½ oz., amyl acetate 20 oz.
(3) Gold size and turpentine equal parts.
(4) Gold size and spirit equal parts.
(5) Borax-shellac solution 2½ parts, spirit 1 part.

Ensure that the base is free from acidity by shaking with chalk, and decanting before mixing the liquid with the bronze.

Solutions of soluble cotton or celluloid (such as 2) in various solvents such as acetone, amyl acetate, or mixtures of those with fusel oil, benzine, &c., are being largely used and are excellent for many purposes. An excellent *lacquer for silverware* is made by dissolving 4 parts of transparent celluloid in 100 parts of acetone It is painted on the silver and allowed to dry. Avoid washing with hot water. One application will last for months.

Boot-polishes

1 (*Tan*)

Water	5 gals.
Resin spirit	5 gals.
Sperm oil	2 pints
Carnauba wax	5 lbs.
Paraffin wax	10 lbs.
Brown Windsor soap	2½ lbs.
Phosphine substitute	1¼ lb.

Cut up the soap, and dissolve by boiling in the water with the phosphine substitute. Melt the wax in a separate vessel, add the oil, stir, remove the vessel from the fire, and add the resin spirit; then mix in the soap solution, and stir in an agitator until the mixture is cold.

2 (*Tan*)

Beeswax	1 lb.
Curd soap	1 lb.
Oil of turpentine	2⅔ lbs.
Water	2 pints
Bismarck brown	½ oz.

Prepare in a similar manner to No. 1. Care must be taken to distribute the Bismarck brown evenly throughout the cream.

3 (*Black*)

Carnauba wax	℥x.
Beeswax	℥xx.
Caustic-soda solution (27 per cent.)	℥iv.
Oil of turpentine	℥Lx.
Nigrosin (oil-soluble)	℥v.
Water	Cong. j.

Melt together the waxes and the caustic-soda solution, and stir till homogeneous. When the mass has partly cooled, add the turpentine, in which the nigrosin has been previously dissolved. Lastly add gradually the water, which should be almost boiling.

4 (*Brown*)

Yellow wax	℥ij.
Stearic acid	℥j.
Linseed oil	℥j.

Melt together and add—

Oil of turpentine	℥vj.
Yellow ochre (in fine powder)	℥j.
Raw sienna (in fine powder)	℥j.

Stir until it is creamy, then add a solution of hard soap 1 oz. in 5 oz. of warm water, stirring constantly.

To produce a black polish this formula, by Mr. E. W. Lucas, may be used with ultramarine and nigrosin in place of the ochre and sienna.

Blood-purifier (103)

(For Skin-eruptions, Eczema, &c.)

Magnes. carbonat.	℥iij.
Sulphur. præcip.	℥iv.
Potass. bitart.	℥iij.
Pulv. rad. sarsæ	℥ij.
Pulv. sacchar. alb.	℥viij.

M.

Grease-proof Boxes

Fish-glue	℥xvj.
Resin	℥ij.
Litharge	℥ss.
Kaolin	℥ss.
Glycerine	℥ss.
Water	℥XL.

Boil the glue, glycerine, litharge, and part of the water together to dissolve, then mix in the other ingredients.

Bronchial Specific (39)

Rad. iridis	gr. lxiv.
Cort. cinchon. flav.	℥ij.
Sacchari	℥xvj.
Vin. ipecac.	℥iiiss.
Tr. camph. co. sine opio	℥ij.
Oxymel. scillæ	℥iv.
Syr. tolutan.	℥iv.
Æther. chlorici	℥ss.
Dec. senegæ conc.	℥iiss.
Aquam ad	℥XL.

Dose: ℥j. to ℥ij.

Headache-cachets

Phenacetin.	gr. vj.
Phenazoni	gr. iij.
Caffeinæ	gr. j.

M. ft. cachet.

Headache and Neuralgia Cachets

Phenacetin.	gr. viij.
Caffein. citrat.	gr. ij.

M. ft. cachet.

Indigestion-cachets

(*Wind-cachets*)

Bismuth. carbonatis	gr. x.
Pulv. rhei	gr. j.
Pulv. capsic.	gr. j.
Sodii bicarbonatis	gr. v.
Ol. anthemidis	m⅓

In one cachet.

Gelatin-capsule Mass

Soft

	A	B	C	D
Gelatin	30	24	16	23
Syrup	—	7	4	—
Glycerine	15	18	7	45
Acacia mucilage	7½	6	4	—
Water	50	45	30	32

Steep the gelatin in the water until soft, then add the other ingredients, and dissolve by the heat of a water-bath.

A is the 'Art of Dispensing' formula, B that of the B.P.C. (by weight), C Mr. J. A. Forret's, and D the Dutch Pharmacopœia (by weight).

Hard

	A	B
Gelatin	℥vj.	℥iij.
Gum acacia	℥j.	—
Sugar	℥j.	—
Water	℥v.	℥vj.
Glycerine	—	℥j.

Prepare as above.

A is the 'Art of Dispensing' formula and B the Dutch Pharmacopœia mass for copaiba capsules (all by weight for B).

Complete instructions for making capsules are given in 'The Art of Dispensing.'

Aperient Capsules

Aloes soc.	gr. iv.
Ol. myristicæ	gr. ¼

In each capsule.

Capsulæ Ferri

(*Blaud's Pill Capsules*)

The ferrous carbonate for these capsules should be a glucosated carbonate (*see* p. 877). It is mixed with paraffin, as in the following formula by Mr. J. H. Franklin:—

Glucosated ferrous carbonate	900 gr.
Soft paraffin	200 gr.
Liquid paraffin	400 gr.

Mix thoroughly.

Of this paste 2½ gr. = pil. ferri, B.P., gr. v.

Blood-capsules

Hæmoglobin. . .	gr. iij.
Ferri et ammon. cit. .	gr. ss.
Ext. cascaræ sagradæ .	gr. $\frac{1}{8}$
Ext. nucis vomicæ . .	gr. $\frac{1}{12}$
Acidi arseniosi . .	gr. $\frac{1}{120}$

Fiat capsula.

Cold-cure Capsules

Creosoti	mj.
Ol. olivæ . . .	mv.

In each capsule.

Dyspepsia-capsules

Mag. calc. levis . .	gr. j.
Pepsini	gr. ss.
Pancreatin. . . .	gr. j.
Calcii lactophosph. . .	gr. j.
Acid. lactic. . . .	gtt. $\frac{1}{4}$
'Taka-Diastase' . .	gr. ss.
Bismuth. subnit. . .	gr. iv.

Mix and fill into a capsule.

Flatulence-capsule

Salol gr. v. in each capsule.

Capsules for Obesity

(*Weight-reducing Capsules*)

Ext. fuci vesiculosi . .	gr. iij.
Ext. gentianæ . .	gr. ij.

Fiat capsula.

Recent observations have clearly proved the value of ext. fuci as an aid in the reduction of weight. The patient must, however, be 'dieted,' liquids being reduced to a minimum—as well as carbohydrates—bread, when used, being in the form of toast, with meat once or twice a day; as little fat as possible, and no butter. The above capsule, or any other preparation of fucus, should be taken every three hours in the course of the day.

Rheumatism-capsules

Potass. bicarb. . .	gr. v.
Potass. citrat. . . .	gr. iiss.
Sodii salicylat. . .	gr. iiss.

Mix and fill into a capsule.

Capsulæ Quininæ Ammon.

(Squire)

Quinine sulphate . .	60 gr.
Ammonium carbonate (powdered finely) .	100 gr.

Soft and liquid paraffins, of each a sufficiency to make a thin paste.

Fill 100 capsules.

Each capsule represents tr. quininæ ammoniat. ʒss.

Capsula Sodii Oleatis

Sodii oleatis acid. . .	gr. iss.
Sodii salicylatis . .	gr. iss.
Phenolphthaleini . .	gr. j.
Mentholis . . .	gr. $\frac{1}{4}$

Misce pro capsulâ.

Tonic Capsules

Quinin. phosphat. . .	gr. ss.
Sacchari lactis . .	gr. iiiss.

In each capsule.

Caramel for Brewing

Messrs. Salamon and Goldie's process of manufacture is as follows:—

About 5 cwt. of good white glucose is melted in an iron vessel at 95° C. It takes about an hour to melt all the glucose, and this is then brought to boil at 110° C. Next 45 oz. of ammonium carbonate and 15 oz. of ammonium chloride are added, and the mixture allowed to boil down, with occasional stirring, until the caramel 'comes on,' which is about two hours after the boiling. This change is seen when the volume of the caramel is about double, and a greyish-yellow vapour is evolved, which is very pungent and stains the hands yellow. The temperature of 'coming on' is about 154° C. The heating is continued until the caramel is so thick that it can only just be stirred. This takes about another hour, but the time varies. The heat is now withdrawn.

If solid caramel is required, the mass is thrown out on iron plates, allowed to cool, and broken up with a hammer. If fluid caramel is desired, sufficient water is added to produce a solution of the required density. Heat is applied, and the caramel allowed to dissolve without stirring, evaporating to the required specific gravity or adding more water, as the case may be. Finally it is strained through a suitable sieve.

Carbasus Hydrargyri et Zinci Cyanidorum

(Lister)

On the occasion of his eightieth birthday (April 5, 1907) the late Lord Lister communicated the following note to the *British Medical Journal* (*C. & D.*, 1907, I., 553):—

Messrs. T. Morson & Son (of Elm Street, Gray's Inn Road, London, W.C.), to whom I am much indebted for the great pains they have taken in the preparation of the salt, have given me for publication the following formula:

Pot. cyanid., 98 per cent. .	46 parts
Hydrarg. cyanid. . . .	88 parts
Dissolve in water . . .	240 parts
Zinc. sulphat.	102 parts
Dissolve in water . . .	120 parts

When the solutions are cooled to about 60° F., mix, collect the precipitate, and wash until no precipitate occurs with ammon. sulphid.

The white powder so obtained is dyed with rosalane, ¼ oz. being used to colour 4 lbs. of the powder.

I tried various aniline and other dyes, and found none that answered its purpose in all respects so perfectly as purified rosalane (as supplied by Messrs. Meister, Lucius & Brüning, of Hoechst-on-Main). Its principal object is to attach the cyanide to a fabric charged with it, and this it does with absolute security. At the same time, the colour which it imparts to the white powder has the important effect of indicating the presence and distribution of the salt in the fabric.

The gauze itself is prepared by drawing it in several thicknesses through a 5-per-cent. water solution of carbolic acid, in which the cyanide is suspended in sufficient quantity to give a deposit equal to about 3 per cent. of the dried gauze, the liquid being constantly stirred meanwhile.

Carbo-sapol

Yellow soap . . .	℥iv.
Soft soap . . .	℥iv.
Carbolic acid (Calvert's No. 5) . . .	℥viij.

Mix the yellow soap, in shavings, with the soft soap and carbolic acid, and dissolve by gentle heat.

This preparation was devised by Dr. Beatson, of Glasgow, as an antiseptic soap for the hands.

Carpet-cleaner

Resin	15 lbs.
Caustic soda . . .	4 lbs.
Water	4 gals.
Boil until saponified, then add	
Carbolic acid . . .	2 gals.
Mix. Cool and add	
Solution of ammonia .	4 gals.
Soft water . . .	13 gals.

Directions: Mix a teacupful of the cleaner with two teacupfuls of soft water, and sponge the carpet with this.

Casks, to Clean

To clean a cask which has become fusty, introduce the following mixture:—

Common salt . . .	1½ oz.
Manganese dioxide .	1½ oz.
Sulphuric acid . .	1½ oz.
Hot water . . .	40 oz.

After a few hours rinse out the cask with several changes of water.

Cataplasma Kaolini, U.S.P.

Kaolin, in very fine powder	577 grms.
Boric acid, in very fine powder	45 grms.
Thymol	0·5 grm.
Methyl salicylate	2 grms.
Oil of peppermint	0·5 grm.
Glycerine	375 grms.

[B.P.C. has kaolin 527 and glycerine 425 for a preparation of the same name.]

Heat the kaolin for an hour at 100° C., occasionally stirring, add the boric acid, then the glycerine, incorporating thoroughly; dissolve the thymol in the methyl salicylate and peppermint oil, and add to the mass. Keep in air-tight containers.

The kaolin for this ready-made poultice should be bolted china clay; the glycerine should be heated to 100° C. before adding it, and the mixture maintained at that temperature for an hour at least, then stirred until cool, and the antiseptics added.

Cataplasma Saponis

(Pharmacopœia Generalis)

Bread poultice	℥xvj.
Scraped soap	℥ij.

Mix.

(Ratier)

Barley meal	℥viij.
White soap	℥iv.
Water	a sufficiency

Mix the meal with a pint of water, boil, and add the soap.

(An Edinburgh Formula)

White soap	℥j.
Milk	℥xx.
Breadcrumb	℥viij.

Boil slightly.

Iodised Catgut

Catgut freed from fat with ether is wound on a glass reel and kept in the following solution for at least ten days before use, and until required:

Iodine	gr. v.
Potassium iodide	gr. v.
Distilled water	℥j.

Lister's Surgical Catgut

Sublimate Liquid

Corrosive sublimate	2 gr.
Distilled water	320 gr.

May be dissolved by heat, but the solution must be used cold.

Chromium Sulphate Liquid

Chromic acid	4 gr.
Distilled water	240 gr.

Add to this as much sulphurous acid (B.P.) as gives a green colour. If more is added the colour becomes blue, which shows that rather too much sulphurous acid has been used. It is well to reserve a few drops of the chromic-acid solution, to be added after the blue colour has just appeared and restore it to green. Then enough distilled water is added to bring the green liquid up to 480 gr. Then add the sublimate liquid. (It is essential that the chromic and sulphurous acid solutions be mixed before the sublimate solution is added.)

The preparing liquid must be twenty times the weight of the catgut. So for 40 grains of catgut 800 grains of preparing liquid is required. The catgut is kept twenty-four hours in the preparing liquid, and is then dried on the stretch.

Lord Lister gave the above directions to manufacturing chemists in 1894.

Kraus's Catheter-lubricant

Gum tragacanth .	2·5 grms.
Glycerine . .	10 grms.
Aqueous solution of carbolic acid (3 per cent.)	90 grms.

Triturate in the cold to form a thick syrup.

This is the original (by Dr. Oscar Kraus, Carlsbad) of *Pasta Lubricans*, B.P.C., which is precisely the same.

Acid-resisting Cement

Asbestos	1 part
Sand	1 part
Silicate of soda (30° B.)	6 to 8 parts

The mass becomes hard when exposed to the air, and resists both heat and acids.

Cement for Celluloid

Shellac	℥ij.
Spirit of camphor . .	℥iij.
Alcohol	℥iv.

Dissolve and strain.

For fastening celluloid to metal or wood.

Silicate Cement

Barium sulphate or kaolin	100
Calcined magnesia . .	1
Slaked lime . . .	2
Sodium silicate 33° B. .	75

Mix.

'Sticks everything, but it is not sticky.'

Ceratum Origani

(*Chilblain-cake*)

Paraffini mollis . .	℥vj.
Paraffini duri . . .	℥j.
Olei origani . . .	℥iij.
Terebeni . . .	℥j.

Melt the hard paraffin on a water-bath, add the soft paraffin, and, when melted, stir in the oil and terebene, cover, and stir occasionally until it solidifies.

Ceratum Salicylicum

(*Corn-paste*)

Salicylic acid . . .	℥ss.
Coco-nut oil . . .	℥iv.
White wax . . .	℥j.

The finely powdered salicylic acid is well mixed with the melted wax and oil, and the mixture allowed to set in a layer about ½ in. thick. When cold it is cut up into suitable sizes, and the separate pieces wrapped in tinfoil.

Charta Antiasthmatica

(*Asthma-paper*)

Belladonna, digitalis, sage, and stramonium leaves of each . . .	℥ss.
Boiling water . .	℥xx.

Infuse for an hour, strain, and in the infusion dissolve—

Potassium nitrate . .	℥iiiss.

Saturate blotting-paper in the liquor, dry, and saturate in a mixture of—

Tincture of benzoin (1 in 5)	℥ij.
Alcohol (90-per-cent.) .	℥j.

Dry and cut into pieces 4 in. by 6 in.

Cockroaches

It is well for those who sell preparations to kill cockroaches to know what they are dealing with. There are three varieties in Great Britain — *Periplaneta americana*, *P. orientalis*, and *Ectobia germanica*. They all increase very fast when once established in a place.

The remedies against the pest are numerous, but fumigation is the only absolutely reliable one. Pyrethrum powder blown into the crevices every night is usually effective in dislodging the insects. The powder does not kill, but stupefies them so that they can be collected and destroyed. Sulphur used in

the same way acts as a repellant. Burning pyrethrum in the infested room is often more effectual than applying the powder in the ordinary way. In Germany gunpowder burnt in the room is found obnoxious to the cockroaches. Traps may also be tried. These take the form of jars or bowls with sticks leading up to them, the jars to be baited with stale beer, for which the roaches have a special fondness. Plaster of Paris mixed with three or four parts of flour may be used in place of beer. Flour-paste containing 1 per cent. of phosphorus also acts as a poison and repellant.

The most effective means of ridding premises of cockroaches is fumigation with carbon bisulphide or hydrocyanic acid, but owing to the risk of explosion with the one and poisoning with the other only an experienced person can do the work. As to the latter, 1 oz. of potassium cyanide with a mixture of sulphuric acid 1 oz. and water 2 oz. is used for each 100 cubic feet room-capacity. The materials are put into a bowl, and the operator immediately withdraws from the room, locking it, and in four hours the window is opened from the outside.

Chicken-cholera Preventive

Carbolic acid	♏lxxx.
Spirit of camphor	ʒij.
Powdered charcoal	ʒij.
Water to	ʒiv.

Shake well, and add a teaspoonful of the mixture to the water or food of six hens.

Chilblain-cure

Guttapercha	ʒxij.
Chloroformi	ʒxx.
Ol. eucalypti	ʒij.
Tr. capsici fort.	ʒij.

Dissolve.

To be painted on the affected parts night and morning.

Chlorodyne

Tr. opii, B.P.	ʒx.
Chloroformi	ʒiij.
Tr. capsici	ʒj.
Ol. menth. pip.	ʒij.
Syr. simplicem ad	ʒxxx.

Dose: 5 to 30 min.

(Without morphine)

Spt. æther. anæsthetic.	ʒiv.
Camphoræ	ʒss.
Spt. ammon. aromat.	ʒj.
Chloroformi	ʒj.
Ess. zingiberis	ʒj.
Tr. capsici	ʒij.
Ol. menth. pip. (vel ol. caryophylli)	♏xx.
Ext. glycyrrhizæ	ʒss.
Syr. simplicem ad	ʒiv.

♏xxx. contains chloroform approximating ♏j.

Tomato Chutney

Green tomatoes	4 lbs.
Demerara sugar	1½ lb.
Sultanas	1 lb.
Mustard-seed	1 oz.
Garlic (pounded)	½ oz.
Cayenne	½ oz.
Ginger (ground)	1 oz.
Pickling vinegar (No. 24)	2 pints

Put the tomatoes, sugar, and vinegar into an enamelled pan and boil to a pulp, then add the other ingredients and boil four minutes longer.

Cold-in-the-Head Cure

Acid. carbolic. liq.	ʒiss.
Terebeni	ʒss.
Ol. eucalypti	ʒj.
Liq. amm. fort. (·880)	ʒiv.

To be used in a smelling-bottle.

Collodium Cantharidis

(Beringer)

Cantharides in No. 60 powder	60 grms.
Pyroxylin	4 grms.
Camphor	1 grm.
Acetone	a sufficiency

Moisten the cantharides with 35 c.c. of acetone, and pack in a

cylindrical percolator. Close and cover the percolator, and macerate for twenty-four hours; then percolate slowly with sufficient acetone until exhausted. Reserve the first 80 c.c. of percolate and evaporate the remainder at a low temperature (55°–60° C.) to a soft extract. Mix this with the reserve, and dissolve the pyroxylin and camphor in the mixture. Finally add sufficient acetone to make the volume 100 c.c. If not entirely clear, set it aside in a cool place until it becomes clear by settling, and then decant.

Collodium Callosum

(syn. *Corn and Wart Cure; Corn-solvent; Corn-paint; Corn-cure*)

72

Acidi salicylici	ʒvj.
Collodii flexilis	ʒivss.
Æther. meth.	ʒvj.
Spt. vini rect.	ʒvj.
Ext. cannab. ind.	℈iv.

73

Acidi salicylici	ʒj.
Ext. cannab. indicæ	℈iv.
Spt. vini meth.	ʒij.
Collodium flexile ad	ʒviij.

74

Acidi salicylici	ʒiij.
Ext. cannabis indicæ	ʒss.
Ætheris methylati	ʒxviij.
Spt. vini methylati	ʒvj.
Pyroxylini	ʒij.

75

Acidi salicylici	ʒxj.
Ext. cannabis indicæ	ʒiss.
Spt. vini meth.	ʒv.
Æther. meth.	ʒxv.
Collodii flex. meth.	ʒviiss.

76

Acidi salicylici	ʒiij.
Ext. cannabis ind.	gr. xcvj.
Collodii	ʒxij.

77

Atropinæ	℈j.
Sandarac. et mastic.	aa. ʒiiss.
Ext. cannab. ind.	℈xx.
Acidi salicylici	ʒiiss.
Spt. vini meth.	ʒij.
Ætheris meth.	ʒvj.
Collodii flexilis	ʒxij.

78

Acidi salicylici	ʒj.
Ext. cannabis ind.	gr. viij.
Ætheris	ʒij.
S.V.R.	ʒj.
Collodii flexilis	ʒv.

79

Salicylic acid.	2oz. 85 grs.
Solution old gold dye (1 in 24)	100 min.
Flexible collodion to	16 oz.

80

Ext. cannab. ind.	gr. xxxij.
Ac. salicylic.	ʒiv.
Collodii flexilis	ʒiv.

81

Salicylic acid	ʒiv.
Alum	℈j.
Ether	ʒx.
Alcohol	ʒij.
Canada balsam	ʒss.
Flexible collodion	ʒiij.
Carmine	to tint

82

Extract of Indian hemp	2
Pyroxylin	3
Salicylic acid	10
Acetone to	100

Dissolve the solids in the acetone.

Corn-cures should be put up in 2-dr. phials with glass rod in the cork. Dip the cork and bottle-neck in a mixture of flake white, resin, and wax.

The original proportion of extract of Indian hemp in corn-collodion was 8 gr. to 1 oz.; 4 gr. is now commonly employed, but 6 gr. appears to be the average. It is chiefly of use as a colouring agent,

but was introduced as a local anæsthetic. Ext. belladon. fol. virid. is equally useful as a colour, and cocaine (alkaloid) is the best pain-killer to put in.

When the extract of Indian hemp is weighed on waxed paper, and put into the collodion along with the paper, the liquid may become quite black, owing to there being something in the paper which is dissolved by the menstruum and reacts with the salicylic acid or any tannin which may be in the extract. The remedy is to keep the waxed paper out of the liquid.

Collodium Flexile Antisepticum
(Harold)

Pyroxylin . . .	ʒx.
Alcohol (90-per-cent.) .	℥vj.
Tincture of benzoin (1 in 10) . . .	ʒiij.
Methylated ether . .	ʒxxv.
Mercuric chloride . .	gr. viij.

Dissolve the pyroxylin in the ether, shaking until it becomes the consistency of paper pulp; then add the tincture of benzoin, and shake the mixture thoroughly. To this mixture add the alcohol in which the mercuric chloride has previously been dissolved.

Surgeons find this satisfactory in closing punctures, dressing wounds, and as a protective covering after suturing in surgical operations.

Complexion and Skin Cream

Lard	ʒiiss.
White wax,	
Powdered soap,	
Rectified spirit of each	ʒij.
Distilled water . .	ʒxvj.
Otto of rose . . .	♏x.
Ess. oils of almonds, cloves, and rose-geranium . of each	♏v.

This produces a nice smooth cream of the proper consistence for packing in tubes. A stiffer preparation for putting up in pots is made by reducing the lard to 1 oz., the distilled water to 12 oz., and increasing the white wax to 4 oz. This produces a preparation of the consistence of a cold-cream made with borax, and sets in much the same manner, readily liquefying on the skin and rubbing in without leaving any trace of stickiness or grease. Owing to the wax great care is necessary in order to produce a perfectly smooth and satisfactory preparation. When the solids and the water have been mixed hot in a previously heated mortar, the cream should be vigorously whipped until cold, not merely stirred. An egg-whisk is very suitable for this, and if it is done thoroughly the result will be a white creamy product of the nature of lin. potassii iodidii c. sapone. The addition of the spirit reduces the extreme frothiness, and the cream when potted will not then shrink in the pots on keeping. Aq. laurocerasi, lysoform, carbolic acid, &c., may be added in small quantities without altering the consistence, but the addition of 3 per cent. of boric acid upsets the balance of the preparation, producing a stiff granular paste from which the water separates.

Complexion-wax

Hydrargyri ammoniati .	ʒj.
Bismuthi oxychloridi .	ʒj.
Ung. paraffin. alb. dur. .	℥j.

Mix intimately and perfume.

This is the type of wax which has been introduced recently. It is really a modification of Hebra's Freckle Ointment, p. 810.

Lumbago-confection

Resin. guaiaci . . .	ʒj.
Pulv. rhei . . .	ʒij.
Sulphuris . . .	ʒj.
Cremor. tartari . .	ʒj.
Mellis . . .	℥iv.–℥viij.

Cap. ʒij. ad ʒj. nocte maneque.

Compare with 'Chelsea Pensioner,' p. 578.

American Cold-cream

Liquid paraffin	128 oz.
Soft white paraffin	7 oz.
Hard paraffin	7 oz.
White wax	32 oz.
Borax	2 oz.
Glycerine	2 oz.
Water	80 oz.

Perfume as desired.

Melt the wax on a water-bath, add the hard paraffin and, when it is melted, the soft paraffin and liquid paraffin. Dissolve the borax in the water at 140° F., add with the glycerine to the melted mixture, place the container in cold water, and stir well until cold, adding the perfume towards the end.

Theatrical Cold-cream

Spermaceti	8 oz.
White wax	24 oz.
Liquid paraffin	128 oz.
Borax	2 oz.
Water	64 oz.

Perfume as desired.

Make in the same manner as American cold-cream.

Cremor Bismuthi

The 'Glasgow Formulary' synonym for Glycer. Bismuthi Carb. (White), p. 633.

Cremor Magnesiæ, G.F.

Light magnesia	gr. 87½
Emulsion of magnesia, B.P.C., to	ʒx.

Crème Fouettée pour la Peau

Prepared lard	ʒiiss.
White wax	ʒij.
Powdered white soap	ʒij.
Rectified spirit	ʒij.
Distilled water	ʒxvj.
Otto of rose	ɱx.
Essential oil of almonds	ɱv.
Oil of cloves	ɱv.
Oil of rose-geranium	ɱv.

Melt the lard and wax on a water-bath and add to the soap in a warm mortar. Rub smooth and add the water (warm) gradually, reducing the temperature of the last portions. When cool add the perfume dissolved in the spirit, stir till the froth has subsided, and pour the mixture into opal pots when it is on the point of setting.

Crème de Menthe

Oil of peppermint, English	ʒj.
Oil of spearmint	ɱv.
Otto of rose	ɱv.
Oil of wormwood	ɱij.
Oil of bitter almonds	ɱij.
Spirit of nitrous ether	ʒiss.
Rectified spirit	Oviij.

Mix and add to a syrup of

Sugar	lb. vj.
Water	Ovij.

Crème de Vienne

This is the name given on the Continent to skin-cream composed of carron oil, zinc oxide, and borax, *e.g.* :—

Boracis	ʒiv.
Zinci oxidi	ʒiv.
Liniment. calcis	ʒiiss.

Triturate the zinc oxide in a mortar with sufficient oil of the liniment to form a paste the consistence of pâte de guimauve. Separately dissolve the borax in lime-water ʒx., and filter. With the filtrate mix oil ʒx., and add this drop by drop to the paste in the mortar, intimately mixing. A white and homogeneous cream results.

N.B.—'Vienna Paste' is quite a different preparation and a caustic. *See* p. 734.

Crystoleum Transparency

There are two methods of making the paper of a photograph transparent. One is to soak with a solution of Canada balsam (1 oz.) and oil of turpentine (2 oz.), and the other is to thin the paper as much as possible with fine sandpaper, then soak with the paraffin and wax composition described on p. 512.

Cud Powders and Balls

I

Sodium bicarbonate	ʒij.
Sodium chloride	ʒij.
Powdered ginger	ʒij.
Powdered gentian	ʒij.
Powdered nux vomica	ʒj.

For one powder.

One three times a day.

II

Carbonate of ammonia	ʒij.
Powdered gentian	ʒj.
Powdered ginger	ʒj.
Powdered nux vomica	ʒj.

For one powder.

One every six hours.

Either of the above can be made into balls with extract of gentian and glucose syrup.

Curaçao Cordial

Oil of sweet orange	ʒiiss.
Alcohol (90-per-cent.)	℥L.
Sherry	ʒiiss.
Jamaica rum	ʒiij. ʒvj.
Sugar	℥lxiiss.
Water to	℥cv.

Mix in the above order, and when the sugar has dissolved, colour the liquor with caramel, add 2 oz. of talc, and filter.

A modification by Mr. H. C. Blair of *Elixir Curassao*, N.F.

Curriers' Dye (Black)

Logwood chips	1¾ lb.
Gum acacia	12½ oz.
Iron sulphate	17½ oz.
Water	16 pints

Boil the logwood with the water for ten minutes, stand twelve hours, and strain. Replace in the pan, add the gum, heat till dissolved, and then add the iron sulphate. Add ½ oz. oil of cloves as a preservative.

Cycle Enamel

	I	II
Button lac	3 lbs.	1¼ lb.
Pale sandarac	1 lb.	—
Manilla copal	—	2½ lbs.
Resin	—	1 lb. 14 oz.
Castor oil	12 min.	—
Nigrosine black	2⅖ oz.	2½ oz.
Sudan G.	87½ gr.	40 gr.
Industrial spirit	1 gal.	1 gal.

The stability of these enamels depends on the number of coats and the care bestowed in the stoving process.

Cycle-tyre Solution

Masticated caoutchouc (negro-head)	ʒj.
Coal-tar benzene	ʒxx.

Dissolve by shaking, and concentrate by carefully. evaporating part of the solvent.

Decocta Sarsæ

These decoctions are recommended by Sir Felix Semon in the treatment of syphilis; 7 oz. of the strong decoction is taken in the morning, and 7 oz. of the weaker in the evening, for twenty-six days, then Kobert's decoction for ten days (dose not stated), next the Zittmann decoctions for a fortnight, finishing up with Kobert's decoction. (*C. & D.*, 1906, I., 533.)

1. *Decoct. Zittmanni Fortius, Ph. G.*

Sarsaparilla (cut small)	ʒv.
Water (35°–40° C.)	℥xviss.

Infuse for twenty-four hours at the stated temperature, then add—

Potash alum	gr. xv.
Calomel	gr. xij.
Precipitated cinnabar	gr. iij.

Heat on a water-bath for three hours, then add—

Bruised anise	gr. xv.
Bruised fennel	gr. xv.
Senna-leaves (chopped)	gr. lxxv.
Liquorice-root (cut small)	gr. xxx.

Heat for fifteen minutes more,

then strain, press, and wash the marc with water to 16 oz.

2. *Decoct. Zittmanni Mitius*

Sarsaparilla (cut small)	.	ʒiiss.
Water (at 35°–40° C.)	.	ʒxviss.
Lemon-peel . .	.	gr. ix.
Cassia-bark . .	.	gr. ix.
Cardamom-seeds .	.	gr. ix.
Liquorice-root .	.	gr. ix.

Prepare in the same manner as No. 1.

3. *Kobert's Decoction*

Sarsaparilla, in coarse powder, 1 kilo., is macerated in 4 litres of water for three hours, then boiled for an hour, and pressed. The decoction is repeated with another 4 litres of water, and the combined liquors evaporated to 1 litre. This is mixed with a litre of alcohol (90-per-cent.), the basin washed out with half a litre of boiling alcohol, and the combined liquor strained. The amount of glucosides is determined in this by the Schultz-Christophsohn method, and the liquor adjusted, by evaporating or adding water, to contain 2 per cent. of the glucosides.

The Schultz - Christophsohn method for determining the quantity of the glucosides of sarsaparilla is as follows:—

A weighed quantity (about 10 grams) of coarsely chopped sarsaparilla is boiled with 100 times its weight of distilled water three times running. The three decoctions are united and concentrated to a small volume (about 20 c.c.), and to the still warm liquid is added ten times as much 96-per-cent. alcohol. The resulting precipitate (containing starch, mucilaginous and colouring matter, and salts) is filtered off, and the residue of the filter is finally washed with 50 c.c. of hot alcohol to remove from it the last traces of glucosides. The whole of the three sarsaparilla glucosides is now contained in the alcoholic filtrates, which are mixed together and concentrated to about 20 c.c. To this solution is added at least an equal volume of barium-hydrate solution (saturated while hot and at once filtered). The resulting precipitate contains all the saponin substances combined with the barium. In order that this should remain quantitatively correct the precipitate is collected on an ash-free filter (previously dried at 110° C. and weighed), and is washed with hot saturated barium-hydrate solution, in which all saponins are insoluble. The filter, with the precipitate, is then dried at 110° C., weighed, incinerated, and the ash weighed. The ash consists of barium carbonate. From the weight of the barium carbonate the corresponding quantity of barium hydrate is obtained by calculation. The sum of the figure thus calculated and the weight of the empty dried filter is deducted from the weight of the filter and the barium-saponin precipitate. The result indicates the amount of the three glucosides present in the sarsaparilla.

From samples of the drug bought by himself in London, Professor Kobert obtained the following results:—

Honduras .	1·18 to 1·29 per cent.
Vera Cruz .	2·40 per cent.
Mexico .	2·92 ,,

Zittmann's Pills, used along with this, contain: calomel, gr. j., ext. coloc. co. gr. iiss., and ext. hyoscyam. gr. j. in each. The B.P.C. name is *Pil. Calomelanos, colocynthidis et Hyoscyami*, and each contains half a grain less of ext. coloc. co.

Depilatories

The much-advertised liquid depilatories are 8 to 10 per cent. aqueous solutions of sodium sulphide. They act well, but the application has to be repeated at frequent intervals. A more up-to-date method is by use of a waxy compound which pulls the hair out by the roots, *e.g.* :—

Ceresin	ʒj.
Yellow beeswax	ʒij.
Resin	ʒvj.
Alkanet-root	ʒij.

Digest on a water-bath for an hour, strain and perfume.

The wax is melted and poured over the part to be denuded of hair and allowed to cool. The hair becomes embedded in the wax, and on raising one end and sharply pulling the strip of wax off the skin the hair comes with it. The method is somewhat painful, but not severely so, and is quite effective.

Depilatory Pomade

Thallium acetate	gr. v.
Zinc oxide	ʒss.
Vaseline	ʒv.
Lanoline	gr. lxxv.
Rose-water	ɱlxxx.

Mix.

Dipsomania Treatment

(*Compare with* pp. 582–6)

The following treatment is to take a man 'off the drink' :—

Ammonium chloride	gr. j.
Aloin	gr. ij.
Compound cinchona tincture	ʒiij.
Viburnum cordial	ʒj.

Dose : One teaspoonful in a wineglassful of water every hour from 9 A.M. until it is all used.

The patient may have a limited amount of his favourite beverage, and if he be very shaky add to each alternate dose of above tr. capsici ɱx. and ext. kolæ liq. ɱxv. Four times a day the patient should receive 5 minims of the following hypodermic injection :—

Daturinæ sulphat.	gr. j.
Strychninæ sulphat.	gr. ij.
Acidi borici	gr. v.
Aquæ destillatæ	ʒij.

Continue the treatment for three weeks, gradually diminishing the number of doses daily. Give veronal when the patient is sleepless.

Army Disinfectant Solutions

Chlorinated-lime Wash

Chlorinated lime (B.P.)	2 oz.
Quicklime	½ lb.
Water to	1 gal.

Creosol Solution (2½ per cent.)

Saponified cresol (liq. cresoli saponat., Ph.G.)	4 oz.
Water to	1 gal.

Corrosive-sublimate Solution

(0·1 per cent.)

Corrosive sublimate	70 gr.
Hydrochloric acid	3 dr.
Water to	1 gal.

The solution should be tinted with a sufficiency of commercial aniline-blue, about 1 gr. to the gallon, to make it a distinctive colour.

Formalin Solution

Formalin	8 oz.
Glycerine	8 oz.
Water to	1 gal.

One gallon should be used for every 400 sq. ft. of surface to be disinfected.

These solutions are employed in the British Army Medical Service.

Disinfectant for Stables, &c.

(*Cresylol Sodique dissous, Fr. Codex*)

Cresol	1 kilo.
Solution of sodium hydroxide (Sp. gr. 1·332)	1 kilo.

Mix in a suitable vessel.

Chemical Dishorner

Caustic potash or soda is used for absorbing the growth of horns in calves in the following manner :—

The hair should first be cut away from the young horn as thoroughly as possible and the oily secretion removed by moistening the part with soapsuds or weak solution of ammonia. The parts that are not to be cauterised should not be wetted, as the natural grease of the parts forms a barrier that prevents the caustic from spreading. The stick of caustic is wrapped up in a piece of paper so as to leave one end exposed. The exposed end is dipped in water to moisten it, and then rubbed on the button or embryo horn until the skin begins to start, care being taken that the whole of the button and the border or matrix are included in the treatment. One application is sufficient.

Sodium ethylate is also used, and is even more effectual.

Distemper-powders

Aspirin . . gr. x. to gr. xx.

One every six hours.

Douglass Mixture for Fowls

Ferri sulphatis . .	j℥.
Acid. sulphuric. dil. .	℥j.
Aquæ . . .	℥xlviij.

M.

Add one teaspoonful to each quart of the drinking-water put in the fowl-runs.

Drain-rockets

Potassium nitrate . .	℥iv.
Powdered resin . .	℥ij.
Manganese dioxide . .	℥ij.
Powdered asphaltum .	℥j.

Mix, and use to pack into cartridge-cylinders, with a suitable fuse.

Ear-wax Solvents

1

Glycerini et liq. hydrogen. peroxidi . .	pts. æqual

2

Glycerine . . .	℥j.
Sat. sol. sodium bicarbonate	℥vj.

Mix.

3

Ætheris . . .	℥j.
Ol. olivæ . . .	℥iij.

M.

Nos. 1 and 2 are used by dropping into the ear, closing with cotton-wool, and in ten minutes syringing with warm water. No. 3 is dropped into the ear at night, again in the morning, then syringing with warm water.

Eau de Quinine

Alcohol (90-per-cent.) .	300	oz.
Glycerine . . .	16	oz.
Tincture of cinchona .	16	oz.
Eau de Cologne . .	40	oz.
Mignonette essence . .	7	oz.
Heliotrope essence . .	7	oz.
Orange-flower water .	25	oz.
Tincture of catechu . .	4½	oz.

Mix in the above order, tint with carmine solution ; set aside for three days, and filter.

Electuarium Catechu, P.E.

(syn. *Confectio Japonica*)

Catechu	℥iv.
Kino	℥iv.
Cinnamon	℥j.
Nutmeg	℥j.
Opium (diffused in a little sherry) . . .	℥iss.
Syrup of red roses (reduced to the consistency of honey) . . .	Oiss.

Powder the solids, mix the opium and the syrup, then the powders, and mass them thoroughly.

Dose : ℈j. to ℥ij.

Eau de Toilette de Lubin

Olei iridis	ʒss.
Olei caryophylli	♏xij.
Olei bergamottæ	ʒv.
Olei lavandulæ	ʒiij.
Tr. moschi	ʒss.
Tr. tolutanæ	℥viij.
Alcohol (90-per-cent.) ad	℥xc.

Electuarium Scordii

(syn. *Diascordium; Diascorum*)

This is an older preparation than elect. catechu (which is also used as diascordium). The formula is—

Opium	℥iss.
Tormentil-root	ʒij.
Sassafras-nuts	℥ij.
Catechu	ʒij.
Teucrium scordium	℥iij.
Honey	℥xxviij.

Prepare in a similar manner to elect. catechu, using Malaga wine to rub down the honey.

Antirheumatic Elixir

Quininæ sulphatis	℈j.
Acid. sulphuric. dil.	ʒss.
Potassii iodidi	ʒj.
Vin. colchici	℥ss.
Tr. aurantii	ʒij.
Spt. chloroformi	ʒij.
Aquam ad	℥viij.

℥ss. bis die ex cyath. vin. aq.

Elixir Apii Graveolentis Co., N.F.

Fluidextract of celery-seed	℥ij.
Fluidextract of coca	℥ij.
Fluidextract of kola	℥ij.
Fluidextract of viburnum prunifolium	℥ij.
Alcohol (90-per-cent.)	℥iv.
Aromatic elixir [U.S.P.] to	℥xxxij.

Mix the alcohol with 8 oz. of elixir, add the celery extract in portions, shaking carefully, then the other extracts; make up to 32 oz. After twenty-four hours filter.

Cough-elixir

1

Pulv. tragacanthæ	ʒij.
Olei anisi	♏viij.
Morphinæ hydrochloridi	gr. xij.
Vini ipecacuanhæ	℥iij.
Chloroformi	ʒj.
Acidi hydrobromici dil.	℥vj.
Glycerini	℥xx.
Liquor. rosæ	℥iv.
Aquam ad	℥lxxx.

Dissolve the oil of anise in the chloroform, and the morphine salt in 10 oz. of water. Rub up the tragacanth with 10 oz. of glycerine gradually added, dilute with 20 oz. of water, and transfer to a Winchester quart bottle; add the chloroform solution to this and shake, then the morphine solution and the rest of the ingredients.

Dose: A teaspoonful.

3. *Balsamic*

Syr. scillæ	lb. viij.
Tr. tolut.	℥ij.
Tr. opii	℥ij.
Ol. anisi	ʒj.
Acid. sulph. dil.	℥iij.
Aq. laurocerasi	℥iv.
Spt. ætheris chlor.	ʒj.
Vini ipecac.	℥ij.
Liq. cocci cact.	q.s.

4 (*A*)

Acid. sulph. aromat.	℥ij.
Vin. ipecac.	℥iij.
Glycerini	℥vj.
Oxymel. scillæ	ʒvj.
Liq. tolut.	℥ij.
Liq. rhœados	ʒj.
Chloroformi	ʒiss.
Ess. composition	ʒj.
Mellis opt.	℥viij.

Dose: ʒj. or ʒij. three or four times a day in a little water.

2

Acid. sulph. arom.	ʒij.
Vin. ipecac.	ʒiij.
Glycerini	ʒvj.
Oxymel. scillæ	ʒxiv.
Liq. tolut.	ʒij.
Liq. rhœados	ʒj.
Chloroformi	ʒiss.

5. *Cherry Cough-elixir*

Morphin. acet.	gr. xxiv.
Antim. potass. tart.	gr. x.
Vin. ipecac.	ʒx.
Ess. ceras.	ʒvj.
Chloroformi	ʒiv.
Acid. tartaric.	ʒij.
Liq. rosæ dulc.	q.s.
Syr. simplic.	ʒxlviij.
Glycerini	ʒxvij.
Acet. scillæ	ʒxij.
Aquæ	ʒxij.

ʒj. pro tussis urgent.

Langham's Cough-elixir

Liq. morph. hydrochlor.	ʒij.
Spt. chloroformi	ʒij.
Tr. cardamom. co.	ʒij.
Acid. phosphoric. dil.	ʒij.
Glycerinum ad	ʒxxiv.

ʒj. pro dosi sine aquâ.

Note.—The title of this preparation makes it liable to medicine stamp-duty.

Elixir Frangulæ

1 (*Continental*)

Fluid extract of buckthorn	ʒx.
Alcohol	ʒiij. ʒvj.

Mix and add—

Vanillin	gr. iss.
Tincture of orange-peel	ʒj.
Aromatic essence	ɱxx.
Syrup	ʒxij.
Water	ʒiij.

Mix, set aside for a few hours, filter, and to the filtrate add 3 drops of acetic ether.

2 (*N.F.*)

Fluidextract of buckthorn	ʒviij.
Alcohol (90-per-cent.)	ʒij.
Compound taraxacum elixir	ʒviij.
Aromatic elixir	ʒxiv.

Mix and, after forty-eight hours, filter.

Dose: A teaspoonful.

Elixir Heroin. c. Terpin.

Heroin.	gr. v.
Terpini hydratis	℈ij.
Spt. vini gallici	ʒvij.
Syr. pruni virgin.	ʒvij.
Glycerin. ad	ʒx.

Mix in the above order.

Compare with p. 595.

Elixir Acetomorphin. Co.

(*Glasgow Formulary*)

Acetomorphine hydrochloride	gr. iv.
Terpin hydrate	ʒj.
Alcohol (90-per-cent.)	ʒiiss.
Liquid extract of Virginian prune	ʒxiij.
Essence of anise (1 in 10)	ɱxx.
Elixir of gluside	ɱxx.
Glycerine to	ʒx.

ʒj. = $\frac{1}{20}$ gr. acetomorphine and $\frac{2}{3}$ gr. terpin hydrate.

Indian Elixir

Ol. rosmarini	ʒj.
Rad. rhei	ʒij.
Cort. cinchonæ	ʒxij.
Rad. zingiberis	ʒvj.
Sem. cardamomi	ʒviij.
Cort. cassiæ	ʒvj.
Spt. rectificat.	Oiv.
Aq. bullientis	Oiv.
Cocci cacti	q.s.

Dose: One to two teaspoonfuls in water, twice a day.

Elixir Ipecacuanhæ

Ext. ipecac. liq.	ʒj.
Alcohol. (90-per-cent.)	ʒj.
Glycerini	ʒv.
Aquam ad	Oj.

This hospital formula provides a preparation of the same strength as the official wine. *See also* p. 595.

Elixir Quininæ Ammon. Co., G.F.

Quinine sulphate	gr. 80
Ammonium carbonate	gr. 192
Strong sol. of ammonia	min. 48
Solution of cochineal	min. 96
Spirit of chloroform	min. 144
Oil of cinnamon	min. 10
Alcohol	ʒiij. ʒvj.
Syrup of orange	ʒiv.
Distilled water to	ʒx.

Diffuse the quinine sulphate in the alcohol and spirit of chloroform, in which the oil of cinnamon has been dissolved, add the carbonate of ammonia dissolved in the water, the strong solution of ammonia, cochineal, and syrup of orange, mix well and filter.

Dose: One teaspoonful well diluted.

Tonic Laxative Elixir

Ext. cascar. sag. liq. insip.	ʒj.
Tr. nucis vomicæ	ʒj.
Tr. belladonnæ	ʒj.
Liquor. sennæ dulcis	ʒvj.
Glycerini	ʒj.

Embrocation

48

Olei terebinthinæ	ʒxxxvj.
Olei arachis	ʒxviij.
Camphoræ	ʒv.
Acidi acetici	ʒviiss.
Ova sex.	
Aquam ad	Ov.

141

Ol. camphoræ essent.	ʒiv.
Ol. sinapis express.	ʒiv.

Eucalyptus Embrocation

Ol. eucalypti	ʒiss.
Camphoræ	ʒss.
Ol. terebinthinæ	ʒxij.
Aquæ	ʒxij.
Acidi acetici	ʒxij.
Ova	vj.

M.S.A.

Household Embrocation

5

Acid. acetic. fort.	ʒxvj.
Acid. acetic. dil.	ʒxvj.
Ol. terebinth.	ʒxxiv.
Tr. canthar.	ʒij.
Ol. origani	ʒvj.
Camphoræ	ʒj.
Ova	ivss.

53

Opii	ʒiss.
Aquæ	ʒx.
Sapo. mollis	ʒij.
Camphoræ	ʒij.
Bacc. capsici	ʒiss.
Ol. cajuputi	ʒiv.
Ol. lavand. exot.	ʒiv.
Spt. vini meth.	Oiss.
Liq. ammon. fort.	ʒx.
Lin. bellad. meth.	ʒx.
Lin. aconiti meth.	ʒx.

Rheumatic Embrocation

1

Olei terebinthinæ et linimenti saponis partes æquales.

2

Ol. cajuputi	ʒj.
Chloroform. meth.	ʒj.
Lin. camph. co. meth.	ʒiv.
Lin. opii	ʒij.
Lin. aconiti meth.	ʒij.
Lin. saponis meth.	ʒv.

Universal Embrocation

4

Acid. acet. fort.	ʒviij.
Acid. acet. dil.	ʒxvj.
Ol. terebinth.	ʒxiv.
Camphoræ	ʒij.
Acet. cantharidis	ʒss.
Ol. origani	ʒss.
Ova quinque.	

5

Saponis mollis	ʒviij.
Ammonii chloridi	ʒij.
Ol. terebinthinæ	ʒxx.
Tr. capsici duplic.	ʒij.
Aquæ	ʒLx.

6

Ova	iij.
Aquæ	℥xij.

Misce et adde—

Ol. terebinthinæ	℥x.
Acidi acetici	℥iv.
Spt. vini meth.	℥iiss.

7

Cotton-seed oil	℥xv.
Oleic acid	℥x.
Eucalyptus oil	℥iiss.
Solution of ammonia	℥xij.
Oil of turpentine	℥viiss.

'A satisfactory preparation.'

White-oils Embrocation

Liq. plumbi acet.	7·35
Lin. cantharidis	7·35
Ol. tereb. canad.	150·00
Acid. acetic. glac.	45·00
Ova recentes duo.	
Aq. destil. ad	600·00

Ft. linimentum sec. art.

Whooping-cough Embrocation

16

Ol. caryophylli	℥iv.
Ol. succini	℥iv.
Ol. camphoræ	℥viij.

Aseptic Rubber Adhesive Plaster

(G. Pinchbeck)

	Parts
Resin	4
Japan wax	1
Benzoated beef-tallow	8
Anhydrous wool-fat	3
Washed indiarubber	2
Sesame oil	1
Lead oleate (precipitated)	80
Methyl salicylate	0·6
Thymol	0·4

Melt the resin, tallow, wool-fat, and wax together; then add the rubber 'solution' (prepared by macerating the rubber in five times its weight of benzine), previously mixed with oil. After recovery of the benzine by distillation the whole is strained through three or four thicknesses of gauze, and the lead oleate, previously melted, added. The plaster-mass is then sterilised with the methyl salicylate and thymol, added to the mass at 65° C. and maintained at that temperature for an hour. The plaster is finally spread on sterile material (shirting, cretonne, &c.), observing aseptic precautions.

Cover the plaster with sterile gauze and pack in sterile air-tight containers.

Sterile Adhesive Plaster

(G. Pinchbeck)

	Parts
Washed rubber	12
Carnauba wax	8
Anhydrous wool-fat	30
Glycerine	10
Zinc oleate	40

Melt the wax and fat, mix with the rubber solution. Recover the benzine. Mix the sifted zinc oleate with the glycerine, and add to the wax, fat, and rubber. Heat to the proper consistency, and spread on linen. Dry under aseptic conditions, cut into strips, wrap in grease-proof paper, enclose in envelopes, and seal. Sterilise by the fractional method.

Aseptic Cantharidin Plaster

(G. Pinchbeck)

	Parts
Cantharidin	0·1
Chloroform	a sufficient quantity
Anhydrous wool-fat	15
Washed rubber	10
Benzoated beef-tallow	43·9
Resin	20
Japan wax	5
Sesame oil	5
Methyl salicylate	0·6
Thymol	0·4

Dissolve the cantharidin, by the aid of heat, in as small a quantity of chloroform as possible; then add the sesame oil and the wool-fat (previously melted). Incorporate with the rubber, resin, tallow, and

wax, previously combined as directed under Adhesive Plaster. Sterilise with the salicylate and thymol, and spread.

Emplastrum Capsici

(A. W. Gerrard)

Liquid extract of capsicum	10 parts
Resin plaster . . .	95 parts

Evaporate the spirit from the extract over a water-bath, then stir into the melted resin-plaster.

Aseptic Capsicum Plaster

(G. Pinchbeck)

	Parts
Liquid extract of capsicum (1 = 2 drug) . . .	10
Anhydrous wool-fat . .	15
Washed rubber . .	10
Benzoated beef-tallow . .	39
Resin	20
Japan wax . . .	5
Sesame oil . . .	5
Methyl salicylate . .	0·6
Thymol	0·4

Evaporate the alcohol from the fluid extract (Gerrard), and add to the melted wool-fat and oil. Incorporate the mixture with the combined rubber, resin, tallow, and wax. Then proceed as directed under Adhesive Plaster. (Contains 5 per cent. of solid extract.)

The B.P.C. contains modifications of Mr. Pinchbeck's formulas.

Emplastrum Manus Dei

Emplastrum plumbi .	ʒix.
Cerati æruginis . .	ʒj.

Melt the lead plaster, add the cerate to it, mix, and stir occasionally until cold.

Ceratum Æruginis

(Kennedy's Plaster)

Ceræ flavæ . . .	ʒiss.
Resinæ pini . . .	ʒvj.
Terebinthinæ . . .	ʒss.
Æruginis subt. pulv. .	ʒj.

Aseptic Zinc-oxide Plaster

(G. Pinchbeck)

	Parts
Zinc oxide . . .	20
Resin	15
Japan wax . . .	4
Benzoated beef-tallow .	25
Anhydrous wool-fat . .	15
Washed rubber . .	8
Glycerine . . .	12
Methyl salicylate . .	0·6
Thymol	0·4

Sift the zinc oxide and make into a paste with the glycerine. Add the paste to the resin, wax, wool-fat, tallow, and rubber combined as directed under Adhesive Plaster. Sterilise with the methyl salicylate and thymol, and spread.

Emplastrum Callosum

(*Corn-plaster*)

Acid. salicylic. . .	ʒiiss.
Ext. cannabis ind. . .	ʒiij.
Emplast. basic. . .	ʒviij.

Corn-silk

Lactic acid . . .	1 grm.
Salicylic acid . . .	20 grms.
Extract of Indian hemp .	3 grms.
Soap plaster . . .	10 grms.
Rubber-plaster basis .	66 grms.

Cod-liver Oil Emulsion

Ol. morrhuæ . . .	Oij.
Mucil. acaciæ . . .	Oij.
Sodii hypophosphit. .	ʒij.
Calcii hypophosphit. .	ʒij.
Elixir saccharini . .	ʒvj.
Ol. amygdal. essent. .	ɱxl.

(Lucke's)

'Very satisfactory and a great favourite with children.'

Irish moss . . .	ʒvj.
Water	ʒlxxx.

Boil down to 2 pints and strain; then add—

Cod-liver oil . . .	ʒxl.

Mix thoroughly, so as to form an emulsion. Next add—

Oil of gaultheria	♏x.
Oil of cinnamon	♏x.
Oil of bitter almonds	♏xij.
Rectified spirit	℥j.

And finally—

Calcium hypophosphite	℥iv.
Sodium hypophosphite	℥iv.
Sodium chloride	℥j.
Boiling water	℥iv.
Glycerine	℥viij.

Mix.

The following is the formula given by Messrs. Scott & Bowne in their German advertisements :—

Bestandteile. — Feinster Medizinal-Lebertran 150,0, prima Glyzerin 50,0, unterphosphorigsaurer Kalk 4,3, unterphosphorigsaures Natron 2,0, pulv. Tragant 3,0, feinster arab. Gummi pulv. 2,0, destill. Wasser 129,0, Alkohol 11,0. Hierzu aromatische Emulsion mit Zimt-, Mandel- und Gaultheria-Oel je 2 Tropfen.

For a dummy show of cod-liver oil emulsion fill the bottles with magnes. calc. levis, tinted, if necessary, to make it cream-like.

Emulsio Ext. Filicis

('*Filicin*,' not filicic acid)

Ext. filicis recentis liq.	℥j.
Calomel.	℈ss.
Syrupi	℥iiss.
Ol. absinthii	gtt. ij.
Ol. menth. pip.	gtt. ij.

Fiat emulsio.

One of the best vehicles for extract of male fern is fresh milk. Half fill a 2-oz. bottle with the milk, pour upon it the dose of extract (℥j. for an adult), shake, and fill up the bottle with milk.

Petroleum Emulsion

1

Petrolatum	℥v.
Almond oil	℥xxv.
Powdered acacia	℥v.
Powdered tragacanth	℥iss.
Comp. syrup of hypophosphites	℥xx.
Water to make	Ov.

Melt the petrolatum, add the almond oil, and when the mixture has become clear allow it to cool. Place the acacia in a dry and capacious mortar, add 20 oz. of the oil mixture and 10 oz. of water. Stir vigorously until a smooth creamy emulsion is obtained. Then add the rest of the oil in portions of about 1 oz. at a time, alternating with portions of about ½ oz. of water, and taking care to keep a smooth and creamy emulsion. Next add gradually 10 oz. of water, stir the tragacanth into the mixture, add the syrup of hypophosphites, and, lastly, enough water to make 100 oz.

The N.F. formula is similar to the above, but without the hypophosphite syrup, and it flavours the above quantity with tincture of lemon ℥iss., and sweetens with syrup ℥ix.

2

Chondri	℥iiss.
Sodii hypophosph.	℥ij.
Calcii hypophosph.	℥ij.
Ol. petrol. alb.	℥vij.
Spt. chloroformi	℥vj.
Mucil. acaciæ	℥j.
Saccharini	gr. j.
Ol. amygdal. ess.	♏v.
Aquam ad	℥xiv.

Extract of Malt and Petroleum

Ol. petrolei alb	℥x.
Pulv. acaciæ	℥iss.
Pulv. amyli	℥j.
Pulv. tragac.	℥iss.

Rub well together and add

Aquæ	℥ij.

Let this stand half an hour, then pour off the top liquid and thoroughly emulsify the residue, adding very gradually the liquid previously decanted.

Vanillin	gr. iij.
Spt. rectificat.	℥j.

S.

Sodii hypophos.	gr. xlv.
Calcii hypophos	gr. xxiv.
Saccharin. solub.	gr. iij.
Aquæ	℥ij.

S.

Mix these solutions and add to the emulsion. Then add in several portions and thoroughly incorporate

Ext. byni . . . ʒxv.

This gives a preparation containing, roughly, 33⅓ per cent. of petroleum. The proportion of malt extract may be varied according to the percentage of petroleum desired in the finished product, 50 per cent. is common.

Gamekeeper's Entice

Oil of caraway . . ʒss.
Oil of cumin . . . ɱxv.
Oil of lavender . . ɱv.
Butter colouring . . ʒij.
Oil of maize to . . ʒiv.

Mix a tablespoonful with barley or corn, and, after it has stood for some time, sprinkle the cereal where it is desired to attract the birds. Effective for preventing pheasants or partridges from straying.

Essence of Cider

Rectified spirit . . Ovij.
Water . . . . Oij.
Amyl valerianate . . ʒvj.
Butyric ether . . . ʒiij.
Amyl butyrate . . ʒj.
Amyl acetate . . . ʒj.
Acetic ether . . . ʒj.

Colour faintly with caramel.

Cocoa Essence (Bernegau)

Fat-free cocoa . . ʒiv.
Vanilla . . . . ʒss.
Cinnamon-bark . . ʒss.
Cloves . . . . gr. xij.
Mace . . . . gr. ivss.
Ginger . . . . gr. iss.
Alcohol (90-per-cent.) . ʒxxviij.
Water . . . . ʒviij.

Macerate for seven days, filter, and pour into a solution of 20 oz. of sugar in 24 oz. of water.

Book-worm Essence

Naphthalin . . . 3 parts
Turpentine oil . . 4 parts
Petroleum . . . 2 parts
Carbolic acid . . . 1 part

Apply to the book-leather with a camel-hair brush.

Essence of Coconut

Theobroma oil, cut small ʒvj.
Acetic ether . . . ʒj.
Butyric ether . . . ʒiij.
Essence of vanilla . . ʒiij.
Essential oil of almonds . ʒss.
Rectified spirit . . ʒxx.

Digest for a month, cool to 50° F., and filter.

Essence of Coffee

Freshly ground coffee . 2 lbs.
Freshly ground chicory . 2 lbs.
Boiling water . . . 1 gal.

Mix, cover, and keep warm for two hours, strain, press, and add 20 gr. of salicylic acid to the liquor, which set aside. Reinfuse the marc in a gallon of boiling water for an hour, press, and strain. Evaporate this liquor to make 6 pints with the reserve. Dissolve in it 4 lbs. of sugar and 10 oz. of caramel.

If the water used is hard, add 20 gr. of sodium carbonate to each gallon.

Essence of Cognac

I

Vanillin . . . . 5 oz.
Oil of white cognac . . 10 oz.
Oil of citron . . . 1¾ oz.
Aldehyde . . . 2½ oz.
Acetic ether . . . 15 oz.
Butyric ether . . . 5 oz.
Essence of vanilla . . 80 oz.
Rectified spirit . . 7½ gals.
Water . . . . 2½ gals.
Oil of cinnamon . . 1¾ oz.
Oil of orris . . . 7 dr.
Oil of neroli . . 400 minims

Mix and filter.

2

Oil of cognac	℥ss.
Oil of neroli	ʒss.
Essence of tonka bean	℥ss.
Essence of vanilla	ʒij.
Acetic ether	ʒv.
Rectified spirit	ʒx.

Mix and filter.

Ess. of Cinnamon and Quinine

Ol. cinnam. ver.	gtt. vj.
Spt. rectificat.	ʒiij.
Tr. quinin. ammon. ad	℥j.

A teaspoonful for a dose.

Essence of Black Currants

Vanilla, cut small	℥j.
Buchu-leaves	℥iv.
Rectified spirit	℥xx.

Macerate for seven days, press, filter, and add—

Butyric ether	ʒij.
Acetic ether	ʒj.
Amyl valerianate	♏v.
Essence of pear	♏x.

Colour with croceine scarlet solution.

Soluble Essence of Hop Ale

Quassia	20 oz.
Gentian-root	1 lb.
Best hops	4 lbs.
Bitter-orange peel	20 oz.
Oil of hops	6 dr.
Rectified spirit (64 o.p.)	20 pints
Distilled water	16 pints

Macerate seven days, press, and filter.

Three ounces to a gallon of syrup.

Soluble Essence of Ginger

Bruised Jamaica ginger	40 lbs.
Bruised African ginger	40 lbs.

Put 20 lbs. of Jamaica ginger into each of two percolators and close the taps; pour on to each percolator 1 gal. of 64 o.p. spirit, and macerate for forty-eight hours. Then percolate with other 2 gals. of spirit, and finally wash down with ½ gal. of water for each percolator until 4 gals. of percolate is obtained. Remove the spent ginger, and pack 20 lbs. of African ginger into each, treating in the same manner as the Jamaica ginger. Mix the tinctures.

To deresinise, place 4 gals. of the strong tincture in a 10-gal. cask open at one end, with tap and lid to fit, pour on this 3 gals. of boiling water, and mix in 1 lb. of sifted kaolin; stir well together and allow to settle. When almost clear, run off the clear essence from the sediment of deposited resin and reserve. Treat the residue with 1¼ gal. of rectified spirit and 1 gal. of boiling water, stir well, and allow to settle. Run off the clear essence into the reserve, to make 8 gals. of essence.

Soluble Essence Clear Ginger-beer

Soluble essence of ginger	4 gals.
Essence of capsicum	20 oz.
Oil of lemon	10 oz.
Rectified spirit	4 pints
Tincture of lemon	4 pints

Mix and filter.

Essence of Stone Ginger-beer

Jamaica ginger, bruised	24 oz.
Cochin ginger, bruised	24 oz.
Spirit of wine (56 o.p.)	1 gal.

Macerate forty-eight hours, then percolate and make up to 1 gal. with proof spirit. Add—

Oil of lemon	3 oz.
Essence of capsicum	3 oz.

Essence of Dry Ginger-ale

Soluble essence of Jamaica ginger	℥xl.
Essence of vanilla	ʒviij.
Essence of capsicum	ʒiv.
Essence of nutmeg	♏lxxx.
Essence of cinnamon	ʒss.
Oil of cognac	♏xxiv.

Mix and filter.

Two ounces of this to a gallon of syrup.

Soluble Essence of Ginger-ale

1

Bruised Jamaica ginger	12 lbs.
Bruised capsicums	2 lbs. 3 oz.
Rectified spirit	6 gals.
Oil of lemon	36 oz.
Rectified spirit	40 oz.
Tincture of lemon	2 gals.
Essence of neroli	8 oz.
Water	3 or 4 gals.

Prepare a tincture of the solids with the spirit as follows: Place the capsicums at the bottom of a percolator and the ginger on top, and add 2 gals. S.V.R. Macerate forty-eight hours, and run off; add other 2 gals. S.V.R., macerate forty-eight hours, and run off into the first; repeat this with the other 2 gals. of spirit. Wash down the ginger and capsicums in the percolator with 1 gal. of hot water. Put the 6 gals. of tincture into a jar, dissolve the oil of lemon in the 40 oz. of S.V.R., and add to this; then finally the tincture of lemon and essence of neroli, and lastly water. Try the solubility after adding 3 gals., and if not soluble enough increase it to 4 gals. Shake all together and allow to clear, and it will be ready for drawing off. Then add a few drops of essential oil of almonds to each gallon before filtering.

2

Bruised Jamaica ginger	13 lbs.
Fresh lemon-peel	5 lbs.
Fresh orange-peel	4 lbs.
Bruised vanilla-pods	½ oz.
Rectified spirit (64 o.p.)	33 pints

Macerate for a week, then add 11 pints of water. Put 6 pints of the essence into a jar, add 8 pints of water, and shake well. Next dissolve in 1 pint of hot water 3 oz. of phosphate of soda, and add to the essence in the jar. In another pint of hot water dissolve 1 oz. of chloride of calcium, add it to the contents of the jar, and shake thoroughly. Filter the essence before adding to the syrup.

Ginger-ale

The following process makes a fine product:—

The first step is to make a fluid extract of ginger 2 in 1. This is easily done on a large scale, not so easily on a small. Then take fluid extract of ginger (2 in 1) 5 pints, light magnesium carbonate 2 lbs., and add water 5 pints so as to make a thick paste. Dissolve 45 lbs. of sugar in water to make 10 gals. of syrup. To the syrup add 1 lb. of the above paste, stir well and allow to stand one hour, occasionally stirring. Filter through a felt bag, add sufficient caramel, 4 oz. of citric or tartaric acid and 10 grains each of sodium bicarbonate and chloride. Then add usual amount of water and bottle in the ordinary way. The flavour is improved by adding a trace of oil of lime. This process retains the full flavour and pungency of the ginger. A soluble extract may be built along similar lines. The sodium bicarbonate and salt add greatly to the 'tang' of the ale.

Soluble Essence of Lemon

Fresh lemon-peel	10 lbs.
Rectified spirit (60 o.p.)	1 gal.

Macerate for twenty-eight days, with occasional stirring, press, and add—

Terpeneless oil of lemon . ʒij.

Shake well, allow to stand seven days, draw off the clear tincture, and filter the rest.

More or less terpeneless oil of lemon may be added according to the desired cost.

A full year's supply of this preparation should be made each year

in January when the fruit arrives in its best condition. In addition to using the essence in the manufacture of aërated waters, it may be used in the preparation of inf. gentian. co. conc.

Essence of Muscatel

Oil of grape	ʒj.
Tincture of muscatel (1–10)	ʒiss.
Essence of vanilla to	ʒxij.

Essence of Orgeat

Oil of bitter almonds	ʒj.
Oil of wintergreen	ɱxv.
Sherry	ʒj.
Glycerine	ʒj.
Rectified spirit (56 o.p.) to	ʒxx.

Essentia Pepsini

(*Glasgow Formulary*)

Pepsin (scale)	ʒiv.
Rennin	℈iv.
Water	ʒiiss.
Tincture of orange	ʒss.
Tincture of lemon	ʒij.
Syrup of citric acid, B.P.C.	ʒviss.
Glycerine	ʒx.
Elixir of saccharin	ɱxv.
Best pale sherry to	ʒx.

Essence of Pineapple

Butyric ether	ʒv.
Acetic ether	ʒiv.
Essence of pear	ʒij.
Oil of orange	ʒj.
Rectified spirit	ʒvj. ʒij.
Water	ʒj. ʒij.

Conc. Essence of Raspberry

Pulv. iridis flor.	ʒxxiv.
S.V.R.	Ov.
Aquæ	Oij.

Macerate seven days, press, and filter. To each pint add—

Æther. butyric.	ʒiv.
Æther. acetic.	ʒj.
Æther. amylo-acetic.	ʒss.
Ol. iridis	ʒj.
S.V.R.	ʒij.
Chloroformi	ʒss.
Coloris	q.s.

Raspberry Colouring for the last

Crocein scarlet	ʒj.
Boiling water	ʒxx.

Dissolve.

Essence of Rum

Butyric ether	ʒij.
Acetic ether	ʒij.
Acetate of amyl	ʒiss.
Essence of vanilla	ʒiss.
Tincture of orris	ʒij.
Rectified spirit to	ʒxx.

Mix and filter.

Essentia Sennæ Dulcis

(After M. H. Stiles)

Senna in No. 5 powder	5 lbs.
Golden syrup	30 oz.
Strong tincture of ginger	2 oz.
Alcohol (90-per-cent.)	8 oz.
Oil of coriander	20 minims
Oil of cassia	10 minims
Water	a sufficiency

Macerate the senna in 120 oz. of water at 120° F. for four hours; then transfer to a percolator and percolate 80 oz. Evaporate this to 34 oz. Continue percolation until the drug is exhausted, evaporating the percolate to 6 oz. When cold add the tincture, and the oils dissolved in the alcohol. In twelve hours filter, washing the filter with water to 50 oz., in which dissolve the syrup.

Soluble Essence of Strawberry

Strawberry-juice	1 gal.
Essence of orris	12½ oz.
Butyric ether	2 dr.
Powdered orris-root	8 oz.

Macerate seven days, and filter.

Essences for Temperance Drinks

Flavoured syrup and water make a favourite Continental beverage, and the following are the formulas for the syrup essences. The spirit to be used is 60 o.p.

Lemon Essence

Terpeneless lemon oil	ʒj.
Spirit	℥ix.
Water	ʒxviiss.
Citric acid	ʒij.

Orange Essence

Terpeneless sweet-orange oil	ʒj.
Spirit	℥x.
Orange-flower water	ʒxx.
Citric acid	℥ij.

Peppermint Essence

Terpeneless peppermint oil	ʒij.
Spirit	℥ix.
Water	ʒxviiss.
Citric acid	℥ij.

Standards for Flavouring Essences

Official agricultural chemists of the United States have agreed upon the following standards for flavouring essences or extracts to be used for food (*C. & D.*, 1906, I., 957):—

Flavouring-extract.—'A solution in ethyl alcohol of proper strength of sapid and odorous principles derived from an aromatic plant, or parts of the plant, with or without its colouring-matter, and conforming in name to the plant used in its preparation.'

Standard Strengths

(In percentages by volume)

Almond Ext.—1 per cent. essential oil from seeds of bitter almond, apricot, or peach.

Anise Ext.—3 per cent. oil of anise.

Celery-seed Ext.—0·3 per cent. of celery-seed oil.

Cassia Ext.—2 per cent. cassia oil (75 per cent. cinnamic aldehyde and lead-free).

Cinnamon Ext.—2 per cent. cinnamon oil (65 per cent. cinnamic aldehyde and 10 per cent. eugenol).

Clove Ext.—2 per cent. love oil.

Ginger Ext.—100 c.c. to contain the alcohol-soluble matter of 20 grams ginger.

Lemon Ext.—From oil or lemon-peel or both; 5 per cent. oil of lemon.

Terpeneless Lemon Ext.—Made by shaking the oil with dilute alcohol; contains 0·2 per cent. by weight of citral.

Nutmeg Ext.—2 per cent. of nutmeg oil.

Orange Ext.—Made from oil or orange-peel or both; contains 5 per cent. of oil of orange.

Peppermint Ext.—3 per cent. peppermint oil.

Rose Ext.—0·4 per cent. otto of rose, with or without red-rose petals.

Savory Ext.—0·35 per cent. oil of savory.

Spearmint Ext.—3 per cent. spearmint oil.

Star-anise Ext.—3 per cent. star-anise oil.

Sweet Basil Ext.—0·1 per cent. sweet basil oil.

Sweet Marjoram Ext.—1 per cent. marjoram oil.

Thyme Ext.—0·2 per cent. thyme oil.

Tonka Ext.—From tonka bean, with or without sugar or glycerine; contains 0·1 per cent. by weight of coumarin and a corresponding proportion of the other soluble matters of the bean.

Vanilla Ext.—From vanilla-bean, with or without sugar or glycerine. Soluble matter of 10 grams of vanilla in 100 c.c.

Wintergreen Ext.—3 per cent. wintergreen oil.

Thymol Mouth-wash Essence

Dissolve 1 part of thymol in 99 parts of *Eau de Botot*, prepared from the following formula:—

Orris-root (cut small)	℥iss.
Cinnamon (in coarse powder)	ʒvj.
Galangal (cut small)	ʒvj.
Cloves (coarsely bruised)	ʒvj.
Aniseed (coarsely bruised)	ʒvj.
Cochineal (finely ground)	gr. lxxij.
Oil of peppermint	ʒij. gr. xij.
Balsam of Peru	gr. lxxij.
Coumarin	gr. iss.
Oil of orange-flowers	♏xij.
Otto of rose	♏vij.
Dilute alcohol	℥xxxv.

Macerate for three days, with frequent shaking, strain, press, and filter.

Toothache-essences

100

Chloroform. meth.	ʒiij.
Lin. aconit. meth.	ʒiij.
Tr. capsici	ʒj.
Tr. pyrethri	ʒss.
Ol. caryophylli	ʒss.
Camphoræ	ʒj.

101B

Acid. carbolic.	ʒss.
Camphor.	ʒj.
Tr. myrrh.	ʒj.
Tr. pyreth.	ʒij.
Chloroformi	ʒiij.

102

Camphoræ	ʒiss.
Chlorof. meth.	ʒij.
Ol. caryophylli	ʒss.
Opii	ʒij.
Spt. vini meth.	ʒiij.

103

Tr. benzoin. co.	ʒvj.
Tr. myrrhæ	ʒvj.
Spt. camphoræ	ʒvj.
Tr. opii	ʒvj.
Ol. caryophylli	ʒss.
Camphoræ	ʒss.

104

Acid. carbolic.	ʒij.
Aq. lavandulæ	ʒj.
Lin. saponis	ʒiij.

112

Ol. caryophylli	ʒij.
Chloroformi	ʒiij.
Camphoræ	ʒiv.
Acidi carbolici	ʒiv.
Terebeni	ʒviij.
S.V.R.	ʒviij.

113

Ol. caryophylli	ʒss.
Acid. carbolic. liq.	ʒiij.
Liq. cocci	ʒss.
Glycerinum ad	ʒvj.

114. *Toothache-specific*

Chloroformi	ʒj.
Tr. pyrethri (B.P., '85)	ʒj.
Pulv. camphoræ	ʒss.
Mentholis	gr. iv.

115

Camphor.	ʒiv.
Thymol.	ʒij.
Acid. carbolic.	ʒij.
Ol. caryophylli	ʒiv.
Terebeni	ʒj.
Chloroformi	ʒj.
S.V.R. ad	Oj.

116

Ol. caryophylli	ʒij.
Menthol.	ʒiss.
Aceti aromat.	mxl.
Æther. meth. ad	ʒj.

Liquid Extract of Capsicum
(A. W. Gerrard)
(*Ext. Capsici Liquidum, B.P.C.*)

Take of capsicum-fruit in No. 60 powder 100 parts, exhaust it by percolation with 90-per-cent. alcohol, distil off the alcohol until the residual extract weighs 50 parts.

Each grain of this extract is equal to 2 grains of powdered capsicum, and should yield on evaporation of the alcohol not less than half its weight of semi-solid extract. The process is similar to that for liquid extract of capsicum of the U.S.P., but the product is double strength.

Ext. Cascaræ Sagradæ Liq. Miscibile
(J. H. Franklin)

Cascara sagrada in No. 20 powder	20 oz.
Glycerine	8 fl. oz.
Strong solution of ammonia	80 minims
Distilled water	a sufficiency

Moisten the cascara sagrada with 15 oz. of distilled water and set the mixture aside for six hours, then pack it loosely in a percolator and percolate with more distilled water until the powder is exhausted; evaporate the percolate to 12 fl. oz., cool, add the glycerine, allow to stand, filter, and add to the filtrate the strong solution of ammonia.

Cathartic Elixir

Extract. sennæ fluidi, U.S.P.	125 c.c.
Ext. podophyll. fl., U.S.P.	62 c.c.
Extract. leptandræ fl., U.S.P.	50 c.c.
Extract. jalapæ fl., N.F.	50 c.c.
Sodæ tartaratæ	125 grams
Sodii bicarbonatis	16 grams
Elixir taraxaci, N.F.	250 c.c.
Elixir glycyrrhizæ ad	1,000 c.c.

Mix the fluid extracts with the taraxacum elixir and dissolve the salts in it, and add liquorice elixir.

Dose for an adult, ʒij.

A product resembling preparations like Seigel's syrup.

Malto-hypophosphites

Syr. hypophosph. co.	ʒv.
Ext. malti liq.	ʒxv.

With a good average liquid extract a clear mixture is formed, which becomes slightly turbid on standing, but does not deposit appreciably.

Extract of Vanilla

(Kalish)

Mexican vanilla-beans	3½ lbs.
Granulated sugar	7 lbs.
Cologne spirit	4 gals.
Water	3 gals.

Cut the beans into pieces about 1 in. long, place them in a porcelain jar, and pour on them 7 pints of boiling water. Macerate for twenty-four hours, and pour off the supernatant liquid. Grind the beans finely, passing through a mincing-machine, and macerate in a porcelain jar with the sugar and three more pints of water. Within twenty-four hours add 1 gal. of Cologne spirit (or alcohol 90-per-cent.); macerate seven days, and add another gallon of spirit; another week, and add ½ gal. of spirit. Macerate for thirty days longer, and percolate through a percolator with a muslin diaphragm. After the liquid has been run through, add a menstruum of 9 pints of water and 12 pints of spirit. Product 7 gals. [*i.e.*, 896 oz.].

The tincture should be clear and bright, and must not be filtered. It is best kept in wood for six months, but may be used at any time. Vanilla tincture cannot be prepared in a few days.

[The pint in this American recipe is 16 oz., and the gallon 128 oz.]

Ferri Carbonas Glucosatus

1. S. C. Gadd

Ferrous sulphate	30 lbs.
Sodium bicarbonate	21 lbs.
Glucose and water	a sufficiency

Dissolve the ferrous sulphate in 12 gals. of hot water. Dissolve the sodium bicarbonate in 30 gals. of warm water (about 50° C.). Filter if necessary. When cool add the iron solution to the soda one in a 60-gal. vessel, with stirring. Fill up the vessel with boiling water. Stir, and set aside. Cover loosely. When cool, syphon off, and reject the clear supernatant liquor. Repeat this twice. Collect the precipitate on calico, and squeeze out the water. Mix the precipitate in a large mortar with 5 per cent. of its weight of glucose. Set aside for seven days. Decant the supernatant water.

The finished product contains about 60 per cent. of $FeCO_3$.

2. J. H. Franklin

Ferrous sulphate	26 oz.
Liquid glucose	8 oz.
Sodium carbonate	28 oz.
Boiling distilled water	a sufficiency

Dissolve the sulphate and 4 oz. of the liquid glucose in 80 oz. of

the water, and the carbonate in 40 oz. of the water; add the former to the latter solution, stirring constantly, then add 120 oz. of the water, mix, cover, and set aside to settle. Draw off the supernatant liquid; wash twice with 160 oz. of distilled water each time; mix the precipitate with 4 oz. of liquid glucose; evaporate on a steam-bath as far as possible, dry quickly in a hot-air chamber, and reduce to fine powder.

Contains 66·5 per cent. of $FeCO_3$ (B.P. contains 34·6 per cent.).

These preparations are recommended for making Blaud's pills, capsules, and tablets. See *C. & D.*, 1907, II., 179.

Ferri Pomatum

(German)

Pulp 50 parts of ripe sour apples and press out the juice, to which add 1 part of iron filings; heat on a water-bath as long as gas is given off, and add water to make the weight 50. Set aside for a few days, filter, and evaporate to pilular consistence.

Finings for Beer

One pound of isinglass makes 10 gals. of finings.

1

Cover 1 lb. of genuine isinglass with cold water, then add 4 oz. of tartaric acid; cover and let stand for twenty-four hours, adding water if needed, and stirring until all the isinglass is dissolved; then pass through a sieve.

For use 2 pints of the liquid is required to 30 gals. of the liquid it is intended to clarify.

2

To 7 lbs. of isinglass, covered with water, add 1 lb. of tartaric acid, dissolved in warm water, and 1 gal. of sulphurous acid. Add fresh water as the isinglass swells. Rub through coarse and fine sieves, with intervals between the rubbings. Make up to 72 gals.

3

To 1 gal. of acetic acid add 8 gals. of water; mix well, and add 8 lbs. of isinglass. Fresh water to be added every morning, and the whole to be well 'rummaged' until of the consistency of cream.

Fireproofing Wood

(*Ignifuge*)

French official experiments in regard to fire prevention have proved that a solution of ammonium sulphate 135 grams, borax 15 grams, boric acid 5 grams, and water 1,000 grams is effective in preventing blazing of fired materials treated with it. A pile of treated pine shavings, wood, paper, and cotton fibre (saturated with the solution and dried) was simply blackened and charred by fire, and gave out no flame. Paper and cotton-fibre treated with the same solution consumed very slowly without a blaze.

Fish-bait Oils

Benzoin	ʒj.
Olive oil	ʒxij.

Powder the benzoin and macerate with the oil for a day after a preliminary heating on the water-bath, then strain and add—

Oil of rhodium . .	ʒss.
Oil of patchouli . .	♏vj.
Green oil . . .	ʒiss.

Screw-worm Fly Sores

Compsomyia (*Lucilia*) *macellaria* has been investigated by the U.S.A. Agricultural Department, which states that for sores infested

with maggots, crude carbolic acid, 1 in 30 of water, is the best remedy known. It not only kills the maggots, but it aids greatly in healing the wound. After having thoroughly washed out the wound with the mixture of water and carbolic acid, apply a coat of pine-tar, which will prevent a later deposit of eggs. In case of a deep wound, cotton lint soaked with tar might well be inserted in the cavity. Calomel has also proved a good remedy. Creolin or any of the carbolic sheep-dips forced into the wound by a common machine-oil can holding 4 oz., is a very cheap and satisfactory method of killing the maggots. Animals can be protected from the adult fly by being coated with a mixture of tar and grease or fish-oil alone. So long as the odour lasts the fly appears not to deposit eggs on the part treated with the smear.

Sheep Fly and Scab Lotion

Hydrargyri perchloridi	ʒj.
Spt. picis	ʒx.
S.V.M.	ʒvj.
Ext. quillaiæ liq.	ʒij.
Aquam ad	Cong. j.

To prevent fly striking on the sheep dilute 1 oz. of the lotion with a reputed quart bottleful of water; to kill vermin 3 oz., and to cure scab 4 oz., with the same quantity of water.

Warble Flies

To prevent warble flies striking cattle the Board of Agriculture recommend the use, from May to September, of the following:—

Train oil	1 quart
Oil of tar	4 oz.
Flowers of sulphur	4 oz

Mix together.

This is to be smeared on the animals' legs just above the hoof, where the fly strikes most commonly, and over the shoulders. The majority of warbles in the United Kingdom are produced not by the common ox-warble fly, but by the American 'heel' fly (*Hypoderma lineata*), others by *H. bovis*, which deposit eggs on the hairs of the legs just above the hoof. When these are hatched the maggots pass into the mouth should the animal lick itself, and after boring their way through the wall of the gullet they finally take up their position just under the hide along the back.

The efficacy of the smearing treatment as a preventive is disputed, but it is of some service. Wherever a warble is seen on an animal's hide, the worm should be squeezed out and the orifice treated with an antiseptic dressing.

Floor-sweeping Compound

Dry sawdust	10 lbs.
Paraffin oil	32 oz.
Paraffin wax	2 oz.
Coarse salt	8 oz.
Sea sand	4 lbs.

Mix and odorise with eucalyptus oil 2 oz.

Fly-paper Composition

Thuss and amber resin, of each	3 lbs.
Castor oil	2 lbs. 12 oz.
Viscum	4 lbs.

Melt and apply hot.

Dry Fly-fishing Oil

Paraffin oil, sp. gr. 0·88.
Petrol . . . equal parts

Dip the flies in the oil, and press between blotting-paper to remove excess.

Foot-rot in Sheep

The Board of Agriculture's recommendations for the prevention and cure of foot-rot in sheep are, in brief:—

1. A bath of wood or concrete, 16 ft. long and 8 in. wide, sides sloping out, ends 3 in. deep, provided with cross pieces or grooves to prevent slipping, side fences close boarded and to slope out so as to admit of sheep walking easily through.
2. Solution to consist of 1 lb. copper sulphate in 1 gal. of water, or, if prevention only is aimed at, half this strength will suffice. Time to be allowed for thorough solution.
3. Copper sulphate to be bought under a guarantee of purity (98 per cent.), and if possible to be powdered, not in large crystals.
4. Sheep if badly affected to have hoofs pared before the animals are put through the bath.
5. A day when the grass and soil are dry to be selected.
6. Copper sulphate and most of the substances used being poisonous, a cover for the bath, to prevent stock drinking the solution, may be an advantage. In any case the bath must be well fenced in.
7. If ewes with lambs at foot are treated, they should be put through very quietly, so as to prevent the solution getting on to the teats and thus into the mouths of the lambs.
8. Sheep with long wool should also be put through very quietly, or otherwise the solution may, under certain circumstances, discolour the wool.

Formocresol

Cresolis	ʒj.
Liq. formaldehydi . .	ʒj.

For use as a dental antiseptic.

Fresco-restoration

The late Professor A. H. Church, in restoring the wall-frescoes in the Houses of Parliament at Westminster, cleaned the pictures with breadcrumb and distilled water. Places where the paint was peeled off were touched up with tempera colours, while the weak areas of the ground or of the original paint received several applications of the following paraffin mixture:—

Two ounces of ceresin (melting-point 156° F.) is melted and then thoroughly mixed with ½ oz. of oil of spike lavender and 5 oz. of toluol (by measure). The mixture is warmed till complete solution ensues; on cooling it forms a soft ointment-like paste which admits of being spread upon any surface by means of a brush or palette-knife. When, after the lapse of an hour or two, the toluol has evaporated, a spirit-flame or smokeless gas-jet is brought near the treated surface, the residual ceresin melts and is driven into the soft or decayed plaster or paint. Directly this is done, repainting may be commenced upon the plaster, which will be found to be hardened and capable of firmly retaining fresh pigment.

Preserving Fruit with Formalin

(Board of Agriculture's Directions)

Put 10 gals. of water (preferably rain-water) into a cask or a zinc bath; add 3 pints of formalin, mix thoroughly; then immerse as many apples, contained in a net or loosely woven sack, as the water will cover. The fruit, after remaining in the solution for ten minutes (the sack being lifted up two or three times to ensure every part of its contents coming into contact with the liquid), should be removed from the sack and placed on a layer of straw, hay, or some suitable substance to drain and dry. It is not necessary to immerse in water, after their removal from the formalin mixture, apples that are intended for storing. Plums, strawberries, and other soft fruits should be placed in a sieve or some such firm, open structure for immersion in the solution. The strength of the formalin solution does not deteriorate by use, so that the process of sterilising batch after

batch of fruit can be continued until the solution is practically used up in the process.

Fruit-crystals

Lemon

Tartaric acid	3 lbs.
Granulated sugar	6 lbs.
Oil of lemon	2 oz.
Rectified spirit	2 oz.
Quinoline yellow	to colour

Orange

Tartaric acid	1 lb.
Granulated sugar	3 lbs.
Oil of bitter orange	½ oz.
Rectified spirit	1 oz.
Croceine orange	to colour

Raspberry

Tartaric acid	1 lb.
Granulated sugar	3 lbs.
Conc. essence of raspberry	2 oz.
Raspberry colouring	a sufficiency

Strawberry

Same as raspberry, but with 2 oz. of concentrated essence of strawberry in place of raspberry essence.

Cherry

Same as raspberry, but with 2 oz. of concentrated essence of cherry in place of raspberry essence.

Stone Ginger-beer

Tartaric acid	1 lb.
Granulated sugar	7 lbs.
Ess. stone ginger-beer	8 oz.
Essence of capsicum	1 oz.
Oil of lemon	½ oz.

For Spiced Elderberry-wine
(Non-alcoholic)

Tartaric acid	1 lb.
Granulated sugar	5 lbs.
Essence of spiced elderberry	6 oz.
Essence of cognac	1 oz.
Raspberry colouring	a sufficiency

Tartaric acid in small crystals is used. The flavouring and colouring are mixed with the granulated sugar, the acid then added, and the mixture dried.

In each case 2 oz. of crystals go with 1 lb. of sugar and a pint of water to make a syrup.

Furniture and Leather Polishes

1

Yellow beeswax	3 lbs.
Carnauba wax	1 lb.
Pearlash	½ lb.
Water	9 pints
Oil of turpentine	4 pints
Cerotin orange	70 gr.

Melt the waxes together, then add half the water in which the pearlash has been dissolved, and boil, mixing well until a uniform mixture is obtained. Then with diligent stirring add the rest of the water (hot); remove from the fire, and add in a similar manner the turpentine, in which the cerotin orange has been dissolved by heating on a water-bath.

2

Yellow beeswax	20 oz.
Japan wax	20 oz.
Hard soap	5 oz.
Pearlash	1 oz.
Water	7 pints

Prepare in a similar manner to the above, dissolving the soap and pearlash in half the water (boiling). The polish may be coloured with cerotin orange dissolved in the melted waxes, or with alkanet extract dissolved in the soap solution.

NOTE. — Nowadays a popular base for furniture-polishes, 'liquid veneer,' and the like is rosin oil, and it makes a good product, working more rapidly and with less friction than linseed oil and turpen-

tine mixtures. Butter of antimony may be added, but must not be in large amount or terpin hydrate crystals will surely be formed, and scratch instead of polish. Crude petroleum or paraffin oil is sometimes added, but this leaves an oily film on the articles polished, which shows finger-marks very easily.

Gelatum Heroin. Co.

Heroinæ . . .	gr. vj.
Terpini hydratis . .	ʒij.
Aquæ	℥viiss.
Gelatini	ʒj.
Glycerini . . .	℥xviij.
Tr. tolutanæ . . .	ʒj.
Spt. rectificat. . .	ʒij.
Syr. pruni virg. . .	ʒj.

Soak the gelatin in 20 oz. of water; when soft add the glycerine, and dissolve by the heat of a water-bath; skim. Dissolve the heroin and terpin hydrate in 10 oz. of water to which have been added the tincture, spirit, and syrup, and bring up the weight to 27 oz. with warm water. Strain, and pour into 2-oz. w.m. bottles.

Dose for adults: ʒj. to ʒij. three times a day.

Glass-decorating

(Knapp's Process)

Caustic soda .	25 to 35 grams
Lime . .	25 to 35 grams
Sodium sulphate	7 to 10 grams
Magnesium sulphate . .	3 to 7 grams
Sodium silicate (38-per-cent.)	125 to 1,000 grams

Mix well, and use as follows:—

A rubber plate carrying the required drawing or lettering in relief is covered or coated with the liquid by means of a printer's roller. The moistened rubber plate is then pressed on to the bottle by rolling the bottle on the plate. The imprint retained on the bottle is next dusted with a coloured mineral powder, and the decorated bottle heated to as high a temperature as feasible. The label is said to resist boiling water.

Glove-cleaner

Coconut-oil soap . .	ʒj.
French chalk . . .	ʒiss.
Powdered quillaia . .	ʒss.
Oil of lemon . . .	ʒss.
Water	ʒiv.

Shred the soap and dissolve in the water by heat, add the oil of lemon, the quillaia, and the French chalk, using more of the last named if needed to form a stiff paste.

Glycerinum Acetomorphinæ, G.F.

Acetomorphine hydrochloride . . .	gr. iv.
Chloroform . . .	♏x.
Alcohol . . .	♏xx.
Syrup of roses . .	ʒv.
Water	ʒj.
Glycerine to . . .	ʒx.

Dose: ʒss. to ʒj. (equal acetomorph. hyd. gr. $\frac{1}{40}$ and gr. $\frac{1}{20}$).

Glycetracta or Glycetracts

(W. H. Martindale)

Mode of Preparation

1. For drugs containing water-soluble constituents, bitters, tannin principles, and some flavouring agents: —

(*a*) *Percolation-process.* — For those drugs which will percolate satisfactorily without 'blocking' this method is to be preferred. Macerate the powdered drug 100 in glycerine 50 and water 200 for twenty-four hours, then commence percolation. Reserve the first 50 of percolate, and continue percolation with chloroform-water (1 in 1,000) until exhausted. Evaporate the liquor to 50 and add to the reserved portion.

Suitable for calumba, cascara (1 per cent. of strong solution of ammonia to be added), digitalis, gentian, hamamelis-leaves, krameria, rhubarb, sarsaparilla, senega, taraxacum, valerian, and Virginian prune bark.

(*b*) *Maceration-process—i.e.*, for drugs which will not percolate satisfactorily. Macerate crushed drug 100 in a hot mixture of glycerine 50 and water 200 for six hours, press off, and repeat maceration with hot water twice. Combine the liquors and evaporate to 100.

Suitable for chiretta, liquorice (cold maceration), quassia, senna (cold maceration), and squill (cold maceration).

2. For drugs which contain

alkaloids the menstruum must be acid, as follows :—

Percolate the crushed drug 100, with a mixture of glycerine 50, acetic acid 9, and water 191, and proceed otherwise as under 1 (*a*), making the final product 100, containing about 3 per cent. of acetic acid.

Suitable for aconite, belladonna, cinchona, colchicum, conium, ergot, gelsemium, hydrastis, hyoscyamus, ipecacuanha, jaborandi, and nux vomica. Experiments show that a larger proportion of acid does not seem to yield better alkaloidal results.

Glycetracta are of 1 = 1 strength, the dose being the equivalent in volume to the dose of the drug, excepting the following, for which standards as below are suggested :

Glycetract	Alkaloidal strength	Dose
Aconite	0·4 per cent.	(Average) 1 min.
Belladonna	0·375 ,,	¾ to 2 min.
Cinchona	3 ,,	8 to 25 min.
Coca	0·25 ,,	1 to 2 dr.
Colchicum (seeds)	0·5 ,,	(Average) 3 min.
Conium (seeds)	0·45 ,,	(Average) 3 min.
Ipecacuanha	1·1 ,,	Double the B.P. liquid extract
Nux vomica	0·75 ,,	2 to 6 min.

Glycetract of nux vomica is rather thick, owing to gummy matter extracted, and gets thicker on keeping.

Glycerol Catechu

Extract of catechu (cutch)	24 grams
Oil of cassia	0·1 c.c.
Glycerine	200 c.c.
Water to	400 c.c.

Mix the glycerine with 150 c.c. of water, add the catechu extract, and dissolve by the aid of heat; then add the oil (2 drops) and water to 400 c.c. Filter.

Glycerol Hæmatoxyli

Logwood extract	24 grams
Aromatic sulphuric acid	12 c.c.
Glycerine	200 c.c.
Oil of cassia	0·1 c.c.
Water to	400 c.c.

Mix the acid with the water, dissolve the extract in it, and proceed otherwise as with catechu glycerol.

Glycerol Krameriæ

Extract of rhatany	6 grams
Glycerine	100 c.c.
Oil of cassia	0·1 c.c.
Water to	200 c.c.

Proceed as for catechu glycerol.

These glycerols are by Mr. W. C. Kirchgessner.

Glycerol Thymolis

Thymol.	gr. ss.
Spt. rectificat.	℥ss.
Glyc. boracis	℥j.
Tr. cardamomi co.	℥ss.
Aquam ad	℥viij.

Chewing-gum

Gum chicle	1 lb.
Powdered sugar	3 lbs.
Flavouring	a sufficiency

The gum chicle is coarsely powdered and triturated with 1 lb. of the sugar, and the powder passed through a coarse sieve. The remainder of the sugar is then mixed in, and the vessel containing the mixture is heated on a sand-bath until the mass softens upon stirring. It is then well worked and transferred to a slab sprinkled with sugar. The flavouring or other ingredients are next sprinkled upon the mass and mixed by kneading. Finally it is rolled out into thin sheets and cut into flat sticks of the desired size.

The favourite flavourings are peppermint and wintergreen oils, but cinnamon, cardamoms, cloves, and other breath-perfumes are much in request. On the manufacturing scale special machinery is used for making chewing-gum.

Granulæ Effervescentes pro Base
(Lunan for B.P. Committee)

	Impl. Oz.	Met. Gms.
Sodium bicarbonate, in dry powder	55	550
Tartaric acid, in dry powder	26½	265
Citric acid, in powder from uneffloresced crystals	21	210

General Process.—Mix the sodium bicarbonate, the sugar or gluside, and the medicament when present, pass them through a No. 20 to No. 30 incorrodible sieve, subject the acids previously mixed to the same process, and thoroughly mix the two sifted powders. Place the mixed powders in layers on a suitable dish, pan, or glass tray, heated to between 75° and 85° C. if required, but not to exceed the latter temperature. When the mass by means of proper manipulative kneading and compression has assumed a uniformly plastic condition, suitable for granulation, rub it through a No. 5 to No. 10 incorrodible sieve, according to the size of granule desired and most adapted to the special effervescent preparation. Dry the granules at a temperature not exceeding 50° C.

The product (without medicament) should weigh about 95 oz. (or 950 grams) and 100 oz. (1,000 grams) in the following cases:—

Granulæ Effervescentes Caffeinæ Citratis

	Impl. Oz.	Met. Gms.
Sodium bicarbonate, in dry powder	50	500
Tartaric acid, in dry powder	26	260
Citric acid, in powder from uneffloresced crystals	18	180
Refined sugar, in dry powder	12	120
Caffeine citrate, in dry powder	5	50

Prepare as the base.
Dose: 60 to 120 gr.

Granulæ Effervescentes Ferri et Ammonii Citratis

	Impl. Oz.	Met. Gms.
Sodium bicarbonate, in dry powder	50	500
Tartaric acid, in dry powder	26	260
Citric acid, in powder from uneffloresced crystals	18	180
Iron and ammonium citrate, in dry powder	10	100

Prepare as the base.
Dose: 60 to 120 gr.

Granulæ Effervescentes Lithii Citratis

	Impl. Oz.	Met. Gms.
Sodium bicarbonate, in dry powder	53	530
Tartaric acid, in dry powder	30	300
Citric acid, in powder from uneffloresced crystals	20½	205
Lithium carbonate, in dry powder	5	50

Prepare as the base.
Dose: 30 to 60 gr.

Granulæ Effervescentes Magnesii Sulphatis

	Impl. Oz.	Met. Gms.
Sodium bicarbonate, in dry powder	37	370
Tartaric acid, in dry powder	19	190
Citric acid, in powder from uneffloresced crystals	13½	135
Soluble gluside, in dry powder	⅛	1·25
Desiccated magnesium sulphate, powdered and dried at a temperature not exceeding 100° C. until it loses 20 per cent. of weight	40	400

Prepare as the base.
Dose: Repeated, 60 to 120 gr.; single, ½ to 1 oz.; best administered in warm water.

Granulæ Effervescentes Potassii Citratis

	Impl. Oz.	Met. Gms.
Sodium bicarbonate, in dry powder . .	50	500
Tartaric acid, in dry powder . . .	25	250
Citric acid, in powder from uneffloresced crystals . . .	18	180
Potassium citrate, in dry powder . . .	20	200

Prepare as the base.

Dose: 60 to 120 gr.

Granulæ Effervescentes Sodii Citro-Tartratis

	Impl. Oz.	Met. Gms.
Sodium bicarbonate, in dry powder . .	50	500
Tartaric acid, in dry powder . . .	26	260
Citric acid, in powder from uneffloresced crystals . . .	18	180
Refined sugar, in dry powder . . .	15	150

Prepare as the base.

Dose: 60 to 120 gr.

Granulæ Effervescentes Sodii Phosphatis

	Impl. Oz.	Met. Gms.
Sodium bicarbonate, in dry powder . .	50	500
Tartaric acid, in dry powder . . .	25	250
Citric acid, in powder from uneffloresced crystals . . .	20	200
Desiccated sodium phosphate (sodium phosphate powdered and dried at 100° to 120° C. until it loses half its weight) . .	25	250

Prepare as the base.

Dose: Repeated, 60 to 120 gr.; single, ¼ to ½ oz.; preferably in warm water.

Granulæ Effervescentes Sodii Sulphatis

	Impl. Oz.	Met. Gms.
Sodium bicarbonate, in dry powder . .	50	500
Tartaric acid, in dry powder . . .	25	250
Citric acid, in powder from uneffloresced crystals . . .	20	200
Desiccated sodium sulphate (sodium sulphate deprived of half its weight at 100° C.) .	25	250

Prepare as the base.

Dose: 60 to 120 gr. repeated; ¼ to ½ oz. for single; preferably in half a tumbler of hot water.

Sodii Tartro-sulphas Effervescens
(An alternative process to the last)

	Impl. Oz.	Met. Gms.
Sodium bicarbonate, in dry powder .	41	410
Tartaric acid, in dry powder. . .	37	370
Soluble gluside, in dry powder . .	⅛	1·25
Exsiccated sodium sulphate, deprived of all its water of crystallisation (56 per cent.) . .	22	220

Mix the dry powders, expose them for an hour to a temperature of 50° C., and pass the mixture through a No. 30 incorrodible sieve.

The product should weigh about 100 oz. (or 1,000 grams) and contain 50 per cent. of sodium sulphate.

Dose: Repeated, 60 to 120 gr.; single, ¼ to ½ oz.; preferably administered in warm water. (This tartro-sulphate is a superior and effective *effervescent saline.*)

Preserving Gut of Tennis-racquets

A varnish made with sandarac, shellac, methylated spirit, and half an ounce of castor oil to the pint is excellent. Brush it all over the gut.

The racquets are ready for use in a very short time. If used before being put away for the winter, the varnish protects the gut from the damp and keeps the racquets in good order.

Another formula is—

Sandarac	5 lbs.
Camphor	2 oz.
Powdered glass	3 lbs.
Spirit	14 pints

Dissolve, strain, and add—

Canada balsam	2 lbs.

This forms a white hard spirit varnish, which, diluted with an equal volume of spirit, is used for applying to the rackets before play.

Thieleman's Cholera-drops

(syn. *Mixtura Thielemani; Tr. Anticholerica Thielemani; Thieleman's Koleradraaber.* See p. 646.)

Olei menthæ piperitæ	3
Spiritus concentrati	22
Vini opii crocati	10
Vini ipecacuanhæ	25
Tincturæ valerianæ	40

All the ingredients by weight. The peppermint oil is dissolved in the spirit and is then added to the other ingredients.

The above is the Norwegian formula, and the following is the recipe for

Vinum Opii Crocati

Opii gross. pulv.	15
Cort. cinn. ceylon.	1
Fl. caryophyll.	1
Stigm. croci	5
Vin. malagæ	150

Thielmann's Diarrhœa-mixture, N.F., resembles the above. It is—

Vini opii	ʒj.
Tr. valerianæ	ʒiss.
Ætheris	ʒss.
Ol. menthæ piper.	ʒj.
Fluidext. ipecac.	ɱxvj.
Alcohol ad	ʒiv.

Dose: Thirty minims.

Aniseed Cough-drops

Oxymellis scillæ	ʒxx.
Syrupi tolutani	ʒxiv.
Olei anisi	ʒss.
Vini ipecacuanhæ	ʒvj.
Potassii bromidi	ʒij.
Tr. camph. co. (sine opio)	ʒx.
Ext. glycyrrhizæ liq.	ʒij.
Theriacæ	ʒxvj.
Aquæ	ʒviij.
Sacchari usti	ʒj.

Influenza-drops

Ess. aurantii solubil.	ʒvj.
Tr. aconiti	ɱCLX.
Sacchari usti	ʒiij.
Tr. quininæ ammon. ad	ʒxx.

Lumbago-drops

Tr. opii	ʒss.
Ol. juniperis	ʒss.
Spt. ætheris nitrosi	ʒij.
Tr. benzoin. co.	ʒij.
Tr. guaiaci ammon.	ʒviij.

Lumbago and Backache Drops

Bals. sulphuris	ʒij.
Ol. terebinth.	ʒij.
Spt. æther. nit.	ʒj.
Ol. juniperi	ʒj.

From fifteen to twenty drops on sugar three times a day.

Guttæ Ferri Chlorophosphatis

(*Phosphorised Tonic Drops*)

Acid. phosph. dil.	ʒiij.
Tr. ferri perchlor.	ʒij.
Quin. sulphatis	gr. v.
Spt. chloroformi	ʒj.
Glycerinum ad	ʒj.

Dose: Five to fifteen drops in a wineglassful of water three or four times a day.

Paraphenylendiamine Hair-dyes

When a solution of paraphenylendiamine is mixed with hydrogen peroxide and allowed to stand for an hour or two at the ordinary temperature it becomes dark, thick, and deposits crystals, which are the

oxidation product or Bandrowski base. A similar change takes place when a solution of the amine is applied to the hair, and it is the base that causes irritation of the scalp occasionally. But paraphenylendiamine dye is, on the whole, better for the hair than any other organic hair-dye. It gives a jet-black colour to the hair immediately when applied in two-solution form with chromic acid as the 'developer' as follows :—

No. 1 *Solution*

Paraphenylendiamine .	ʒj.
Glycerine . . .	ʒij.
Distilled water to .	℥v.

No. 2 *Solution*

Potassium bichromate .	ʒss.
Distilled water . .	℥v.

Directions.—Wash the hair free from grease, dry, and apply No. 1 solution with a suitable brush, taking care not to touch the skin; then with another brush apply No. 2 solution as carefully.

The following remarks in regard to the amidol dye on p. 125 are extracted from the 'Extra Pharmacopœia,' ed. xv., vol. ii., p. 18 :—

Amidol Hair-dye (Black)

Amidol . . .	80 gr.
Sodium sulphite . .	120 gr.
Alcohol (10 per cent.)	1 oz.

A large number of experiments conducted April 1911, to determine the best *black dye that shall not stain the skin*, showed that this amidol formula stands first. With this dye the colour develops gradually, the excess of the solution dabbed on in the ordinary way can be slightly washed out, leaving the hair dark brown, but to produce a black several successive applications may be necessary. In our experiments we find that grey hair so dyed will stand vigorous washing with soap and water without appreciably affecting the colour.

It will not stain the skin if carefully applied. It did not appear to rot the hair. The freer the hair is from grease — even the natural grease of the scalp—the quicker the action. A difficulty with regard to the solution is that it deposits the colouring on the side of the bottle.

The amidol dye is based on the formula in 'Pharm. Formulas,' page 125, being double strength. The ordinary strength of 'Pharm. Form.' gives a brown stain as stated. It has the advantage of being odourless and a *one*-solution dye.

To detect paraphenylendiamine the solution should be applied to a piece of pine-wood, when a brick-red colour is produced in every grain of the wood, which is accelerated and strengthened on adding acetic acid, but is destroyed by alkalies.

Hair Preparations

For Alopecia Areata

Chrysarobin . . .	ʒij.
Hazeline cream . .	℥j.

Mix and heat to 300° F. until dissolved, and stir until cold.

To be well rubbed into the patches night and morning.

Dr. L. Leon-James has found this ointment effectual. In the case of young persons who suffer from bald patches on the scalp, following injuries to the head or face, this ointment should be persevered with, but hæmatinics should at the same time be administered. The ointment may be discontinued for a week occasionally, the following lotion being used instead :—

Stimulating Lotion

Ol. sinapis essent. . .	ʒj.
Ol. ricini . . .	ʒij.
Spt. rosmarini . .	ʒij.

To be gently rubbed upon the bald patches for a few seconds.

Scurf Baldness

If the hair is naturally dry, and there is a deficiency of sebaceous secretion, with the result that the scalp becomes scaly, Dr. Morgan Dockrell recommends the sufferer to take plenty of fat either in the diet or as cod-liver oil. The following ointment should be used at night:—

Hydrargyri ammoniati	gr. v.
Liq. carbonis deterg. (Wright)	♏xx.
Vaselini flavi	ʒij.

A yellow scurf is usually due to the opposite cause, and in that case use a

Stimulating Lotion

Quininæ sulphat.	gr. xvj.
Acid. sulphuric. dil.	ʒij.
Tr. cantharidis	ʒij.
Tr. capsici	ʒss.
Tr. lavandulæ co.	ʒij.
Spt. rosmarini	ʒj.
Spt. rectificat. ad	ʒiv.

The amount of fat in the diet should be reduced, as by stopping butter.

Acetone Hair-wash

Oil of sweet almonds	ʒiv.
Solution of ammonia	ʒiij.
Acetone	ʒiij.
Tincture of cantharides	ʒvj.
Eau de Cologne	ʒiv.
Distilled water to	ʒvj.

Mix the oil with a little of the water, and emulsify by adding the ammonia. Then add more water, the acetone, tincture, and perfume, finally making up to volume.

Nursery Hair-lotion

Quassiæ cont.	ʒxvj.
Rad. pyrethri cont.	ʒiv.
Glycerini	ʒxij.
Pulv. acid. borici	ʒiss.
Spt. rectificat.	ʒxvj.
Aq. coloniensis	ʒj.
Aquæ	Ovj.

Macerate for a few days, and filter.

Tonic and Cudding Draught for Cows

Pulv. gentian.	ʒiv.
Pulv. fœnugræc.	℥ss.
Pulv. curcumæ	ʒss.
Ferri sulph.	℥ss.
Potass. nitrat.	℥ss.
Sodii chloridi	ʒj.
Aquam chloroformi ad	℥xl.

Put up in 4-oz. bottles and direct one to be given daily in a pint of cold water.

Headache-remedies

The powders most popular in Great Britain contain acetanilide or phenacetin, alone or with caffeine. Analyses of a number of proprietary remedies were published in the *British Medical Journal*, 1906, ii., 27. The proportion of the active ingredients varied from 2¼ gr. to 6½ gr. in each powder.

Ovary Tonic for Hens

Ferri sulphatis	ʒij.
Calcii phosphatis	ʒj.
Pulv. tragacanth.	gr. v.
Syr. glucosi	q.s.

Fiat massa et divide in pil. L. One twice daily.

Herbal Teas

This class of aperient and alterative herbal compounds is popular on the Continent (*see* pp. 562 and 949). One ounce of the species is infused with a pint of boiling water, the dose of the infusion being a wineglassful twice daily.

St. Germain's Tea

Fennel-fruit	1 part
Cream of tartar	1 part
Elder-flowers	2 parts
Anise-fruit	2 parts
Senna-leaves	4 parts

Köller's Blood-purifying Tea

Anise-fruit	1 part
Triticum rhizome	1 part
Ononis-root	2 parts
Taraxacum-root	2 parts
Guaiacum-wood	4 parts
Senna-leaves	10 parts

Alpine Herb Tea

Buckthorn-bark	8 parts
Senna-leaves	4 parts
Lime-flowers	2 parts
Elder-flowers	2 parts
Mullein-flowers	1 part
Acacia-flowers	1 part
Ononis-root	1 part
Lovage-root	1 part

Ice-cream Powder

Powdered starch	ʒj.
Powdered sugar	ʒj.
Azo-orange dye	a sufficiency to tint
Essence of almonds	mx.
Essence of vanilla	mx.

Mix well and sift.

This quantity is sufficient for a pint of milk, with which it is to be mixed, then brought to the boil, and when cold put in the freezer.

Other colouring and flavours may be used, according to the kind of ice-cream desired.

Indian Brandy
(Non-exciseable)

Itrosyl	ʒj.
Compound tincture of rhubarb	ʒiij.
Chloroform-water	Oiss.
Glycerine	ʒviij.
Syrup	Ovj.

Mix in the above order.

Inhalant

Menthol	ʒiv.
Creosoti	ʒj.
Ol. pini pumil.	ʒj.
Ol. eucalypti	ʒj.
Ol. gaultheriæ	ʒiv.
Ol. cajuputi	ʒiv.

Whooping-cough Inhalation

Acidi carbolici	ʒx.
Tr. iodi	ʒij.
Olei eucalypti	ʒij.
Tr. benzoini comp.	ʒij.

Injection Brou

The following curious formula is an American attempt to get at the composition of the original article through analysis:—

Tr. catechu (1 in 16)	ʒj.
Cocain. muriat.	gr. x.
Plumbi acet.	gr. x.
Zinci sulphat.	gr. x.
Aq.	ʒvj. ʒvj.
Spt. rectificat.	ʒss.

Dissolve the acetate and sulphate each in ½ oz. of water, mix, and add the tincture mixed with 4 oz. of water. Dissolve the cocaine in the rest of the water, add it, and finally the spirit.

Injectio Hydrargyri

For full particulars regarding this preparation, used as an intramuscular injection for syphilis, see *Oleum Cinereum*, where also reference is made to *Calomel Injection*.

Injectio Iodi Hypodermica
(Professor Durante)

Iodine	gr. xv.
Almond oil	ʒxxij.
Guaiacol	℈vij.

All by weight.

Dissolve the iodine in the oil without heat, then add the guaiacol.

Injectio Iodoformi Hypodermica
(Dr. G. A. Brown)

Precipitated iodoform	℈v.
Powdered gum acacia	gr. xxv.
Glycerine	ʒiij. mxx.
Carbolic acid	mv.
Boiled distilled water	ʒv.

Dose: Ten minims upwards once a week.

Both these injections are prescribed in tuberculosis.

Blue-black Ink

Tannic acid	3 oz.
Gallic acid	1 oz.
Ferrous sulphate	4 oz.
Iron filings (clean)	2 oz.
Neutral sulphate-of-indigo paste	6 oz.
Powdered cloves	1 oz.
Water	1 gal.

Dissolve the sulphate of iron in

1 quart of water. In ½ gal. put the iron filings, which should stand at least twenty-four hours, with occasional stirring; pour off the clean portion, and add to the sulphate solution. Having dissolved the tannic and gallic acids in a quart of cold water, stir the solution into the iron liquor, and when fully mixed stir in the indigo; lastly, add the cloves, and keep the ink closely shut up for one or two weeks, then bottle if necessary.

A water-soluble aniline-blue dye may be used in place of indigo paste, but in much smaller proportion.

Blue Ink

The simplest formula for this is to dissolve 1 dr. of indigo-carmine or soluble blue T. in from 6 to 10 oz. of water. Soluble blue T. consists of the hydrochloride, sulphate, or acetate of triphenylrosaniline and triphenylpararosaniline.

Soft Etching-ink

Russian tallow . .	6 oz.
Beeswax. . . .	5 oz.
Asphaltum . . .	2 oz.
Lithographic printing-ink	1 lb.
Mix and add—	
'Litho' varnish . .	1 lb.

Hard Etching-ink

Beeswax . . .	2 oz.
Resin	6 oz.
Lithographic printing-ink	8 oz.
Shoemakers' wax . .	8 oz.

Melt, and when mixed pour into a jar for use.

Red Ink

Carmine . . .	ʒss.
Solution of ammonium acetate	℥j.
Water	℥j.

Dissolve, filter, and add acacia mucilage or syrup ʒij.

Fluid Stencil-ink

Dilute printers' ink with rosin spirit (3 or 4 lbs. of ink to a gallon of spirit), or with a glue and gelatin basis as follows:

Treacle	1 lb.
Glycerine . . .	1 lb.
Scotch glue . . .	2 oz.
Water	2 pints
Drop black . . .	1 lb.

The drop black is replaced by ultramarine blue, Indian red, Brunswick green, or chrome yellow for coloured inks.

Sympathetic Inks

The colourless indicators (such as phenolphthalein) used in volumetric analysis furnish new variants. In the case of phenolphthalein a solution of a grain to 1 oz. of weak spirit with a little simple syrup may be used, and the receiver of the letter should be supplied with a weak solution of soda or lime-water to make the writing appear.

Ink for Polished Metal Surfaces

Resin	ʒiiss.
Spirit	ʒxx.
Methylene-blue . .	ʒj.

Dissolve and add a solution of—

Borax	ʒivss.
Water	ʒxxxvj.

Typewriting Duplicating-ink

The basis of this is glycerine (1 part) and oleic acid (½ part), to which the appropriate aniline colour is added. Violet ink, for example, is made by adding aniline-violet in the proportion of 2 oz. to the gallon, and it is usual to add essential oil to give it a slight aroma. A little oil of rose-geranium or oil of wintergreen is suitable.

Collinge's Spray Insecticide

(For eggs of mussel scale, plum aphis, and apple sucker)

Caustic soda (98-per-cent.)	2 lbs.
Soft soap . . .	½ lb.
Paraffin	5 pints
Soft water . . .	10 gals.

Dissolve the soap in a gallon of boiling water, and while still hot add the paraffin, beating up well, then pump into another vessel through a spray nozzle. Separately dissolve the caustic soda in 9 gals. of rainwater, and mix the paraffin emulsion with it.

Mr. Collinge's investigations on the black-currant gall-mite [*Eriophyes ribis* (Nalepa)] are the subject of a monograph published by J. G. Hammond & Co., Limited, Birmingham (6*d.*), where the following methods for destroying the mite are given :—

1. Fumigation by prussic acid destroys mites but not eggs.

2. Spray fluids are useful only during the migration season. At Woburn petroleum, calcium sulphide, and carbolic acid proved ineffective, as did also S.V.M., naphtha, a saturated solution of naphthalene in naphtha, and 2-per-cent., 0·5, and 0·1 solutions of formalin. Petroleum emulsion (1 part of petroleum, 5 water, 2 soft soap), applied once a month with a brush, is useful.

3. The natural enemies are ladybird beetles.

Iodates

The following remarks by Dr. William Mackie are supplementary to the reference on p. 408.

Iodic Acid is a remarkable deodorant and preservative even when diluted to the extent of a 1-in-2,500 solution. It is employed in ozœna, for deodorising offensive urine, as an irrigant in empyema (strength 1 in 500) and for leg-ulcers, as a mouth-wash—*e.g.*, in inoperable epithelioma—and as a throat-swabbing in diphtheria. It was found very useful in a case of extensive burning (1-in-500 solution). Internally a drachm of a 1-in-100 solution, well diluted, has been given in gastro-intestinal sepsis. It has further proved of value, administered internally, in typhoid fever.

Calcium Iodate is particularly useful as a dusting-powder. An ointment containing 10 to 20 gr. to the ounce of hydrocarbon base is valuable. A lotion is employed in septic and suppurating wounds, and a gauze (3-per-cent. strength) may be used for the same purpose. Healing ensues with the production of a dry scab. A warm saturated solution is used as a vaginal douche or bladder-irrigant. This iodate is eminently efficient as a mouth-wash or gargle. There is a field of usefulness for it in dentistry—*e.g.*, in pyorrhœa alveolaris, &c. An ointment, 10 gr. to the ounce, has been found to be a veritable specific in various forms of eczema. A solution is further useful as an irrigant in otorrhœa. Hypodermic injections of from ½ to 2 dr. of an emulsion of 3 dr. of the iodate in 1 oz. of glycerine have been used in tuberculous joints.

Mercuric Iodate contains 46 per cent. of available iodine. As a general antiseptic it is probably more efficient than either mercuric perchloride or biniodide. With the addition of sodium chloride it is claimed to be soluble to the extent of 2 per cent. in water. It has the scientific advantage of attacking disease organisms with both its component ions, and it contains only half as much mercury as the perchloride. Furthermore, it has been found to corrode instruments less than the salts mentioned. In a pronounced sycosis of hairy parts of the face an ointment containing 20 gr. to the ounce produced an effectual cure.

Bismuth Subiodate is in the form of a fine white powder. It does not irritate the part to which it is applied. It contains 48 per cent. of available iodine. It has been used in lupus in powder form and as ointment (20 gr. to the ounce), and in scrofulous glands as a dusting-powder.

Zinc Iodate contains 61 per cent. of available iodine. It is soluble in water—about 1 in 50. It is stronger than the calcium iodate, and is used for similar purposes.

Iodothymol, Ph.Espan.

1

Iodine . . .	60
Potassium iodide .	80
Water to . .	300

2

Thymol	15
Sodium hydrate .	15
Water to . .	300

Solution No. 1 is poured, little by little, into No. 2, with constant shaking. The precipitate is collected, washed, and dried at ordinary temperature.

Insufflatio Mentholis

Menthol Snuff

—	A	B	C	D	E	F	G	H	I	J	K
Menthol	1	1	1	1	3	1	3	4	30 to 60	10	5
Cocaine hydrochloride	—	—	—	—	—	—	1	2	10	5	2
Ammonium chloride	3	—	—	3	—	6	—	12	—	—	3
Potassium chlorate	—	—	—	—	—	—	—	—	60	—	—
Boric acid	2	10	6	2	20	6	4	30	120	—	50
Sodium bicarbonate	—	—	—	—	—	—	3	—	—	—	—
Camphor	—	—	—	—	—	—	—	—	10	—	—
Eucalyptus oil	—	—	—	—	—	—	—	1	—	—	—
Orris-root	—	—	—	—	7	—	—	—	—	—	—
Coffee	—	10	1	—	30	—	—	—	—	—	—
Magnesium carbonate	—	—	—	—	—	—	3	—	—	—	—
Lycopodium	6	—	—	—	—	15	—	—	480	—	24½
Starch	—	—	12	—	—	20	—	—	—	—	—
Comp. tragacanth-powder	—	—	—	—	—	—	—	—	—	60	—
Arrowroot	—	—	—	—	—	—	—	—	—	60	—
Sugar	—	—	—	—	10	—	—	—	—	—	—
Milk-sugar	—	—	—	—	30	—	25	60	—	60	—
Bismuth subnitrate	—	—	—	—	—	—	—	—	—	60	10

Cough Jujubes

Ol. anisi	ʒxvj.
Acid. benzoic.	ʒxiv.
Ol. menth. pulegii.	ʒij. ʒv. ɱxx.
Ol. menth. pip.	ʒviij.
Sol. capsici	ʒj.

Use 1 drachm to 1 lb. of base.

May also be made into tablets in proportionately smaller amount.

Lac Magnesiæ

(syn. *Magma Magnesiæ*)

It is important to note, as pointed out by Mr. J. P. Gilmour on behalf of the Glasgow Formulary Committee, that the magnesium sulphate used for this preparation should be free from iron, otherwise the preparation has a cream tint, due to a trace of ferric hydroxide. Mr. Gilmour also recommends the addition of 5 per cent. of calcined magnesia to produce the requisite milkiness.

The point to aim at in making this preparation is lightness of precipitate, so that there shall be as little water as possible floating on the top. The first essential in this is great dilution of the magnesium sulphate and alkali solutions, as to which *see* p. 658. Distilled water should be used throughout; a temperature of 120° F. for precipitation has been recommended, but this is a mistake, as the colder the solutions are when mixed, the more impalpable is the precipitate: concentration and heat are the conditions for quick precipitation of heavy hydroxide—the very thing to be avoided in making lac magnesiæ. Allow the precipitate to subside overnight, syphon off the supernatant water, and use recently boiled water for washing, as carbonic acid in the water is prejudicial to the fineness of the precipitate owing to formation of a little magnesium carbonate.

Lapis Miraculosus

Aluminis	ʒxx.
Ferri sulphatis	ʒx.
Cupri sulphatis	ʒvj.
Ammonii chloridi	ʒj.

Mix the powders together, fuse in a porcelain vessel, and pour into moulds.

This formula differs from the one on p. 659 in varied quantities and absence of copper acetate.

Lawn Sand

A mixture of coarse sand and coarsely powdered potassium bi-sulphate up to 1 and 3.

A better composition is made with calcium acid phosphate 10 lbs., ammonium sulphate (crude) 50 lbs., and sand 40 lbs.

Leather-polishing

The principle of polishing is simply the reviving and intensifying of the face of the leather, and for this wax is essential. Ceresine is equal to beeswax. To improve the black appearance, the turpentine used should be saturated with soluble black. Where the original black has perished first give a coating with this solution of black. Satisfactory results depend upon this blacking being used in a proper manner, viz.: Spread the paste thinly over the leather with a soft rag, and when the turpentine has evaporated to some extent finish off by drawing a *soft* cloth backwards and forwards. To make the polish, melt 6 oz. of ceresine in a tin vessel, and while hot pour into a warm 2-lb. jam-pot; fill up to within an inch of the top with turpentine, in which soluble black has been dissolved in the proportion of ¼ oz. to the pint. Stir.

Enamel Letters

To remove these from window-panes soak the edges of the letters with paraffin oil or methylated spirit daily until the letters are loosened, using a spatula each day to take away soft cement and ease the letters. The cement is either white-lead and dammar varnish or calomel and mucilage, the latter being used by chemists only, and for that cement glycerine and water is the best softener.

Filling for Letters on Brass Plates

Stockholm pitch and asphaltum, separately or mixed, are used, but black sealing-wax (shellac, rosin, turpentine, &c.) answers very well. Care must be taken to roughen the depression into which the filling is to be placed, so that the material will be keyed. The brass must be heated when the filling is inserted—also hot.

Life-tonic

Syr. hypophos. co. . .	ʒj.
Sacchar. usti . . .	q.s.
Aq. chlorof. ad. . .	ʒvj.

M.

Dose: A dessertspoonful or more thrice daily.

The Linctus (111)

Oxymellis scillæ . .	ʒj.
Syrupi papaveris . .	ʒj.
Mellis	ʒj.

Dose: One teaspoonful several times a day. To be taken in warm water.

Cough-linctus

21

Morphinæ hydrochlor.	gr. xxxij.
Aquæ laurocerasi	ʒxij. ʒvj. ɱxxiv.
Spt. chloroformi . .	ʒvj. ʒij.
Acidi citrici . . .	ʒij.
Syr. simplicis . . .	ʒxlviij.
Liquor. cocci . . .	ʒj.
Glycerinum ad . .	ʒxcvj.

Dose: One teaspoonful.

106

Acid. sulphurici arom. .	ʒiss.
Ætheris chlorici . .	ʒiss.
Vini ipecacuanhæ . .	ʒij.
Liq. morph. hydrochlor. .	ʒij
Syrupi rhœados . .	ʒiij.
Syr. tolutanum ad . .	ʒiij.

Balsamic Cough-linctus (107)

Liq. morph. hydrochlor. .	ɱCLX.
Spt. chloroformi . .	ʒj.
Vini ipecacuanhæ . .	ʒij.
Syr. scillæ, syr. tolutan., et syr. rhœados ana partes æquales ad . . .	ʒiv.

Dose: One teaspoonful in water three times a day, if required. It is not intended for children.

Pectoral Linctus (108)

Tr. belladonnæ	℥j.
Tr. opii	℥ij.
Tr. capsici	℥ss.
Ol. anisi	℥j.
Ol. menthæ pip.	℥ss.
Acid. sulph. aromat.	℥iss.
Syr. rosæ ad	℥LX.

Black-currant Cough-linctus (109)

Vin. ipecac.	℥xij.
Chlorodyni	℥vj.
Oxymel. scillæ	Oij.
Tr. camph. co.	℥xij.
Fuchsin.	q.s.
Syr. ribis nig.	Cong. j.
Inf. senegæ	℥xij.

Dose: A teaspoonful.

Herbal Cough-linctus (110)

Oxymel. scillæ (B.P. '85)	℥XL.
Vin. ipecac.	℥v.
Acid. sulphuric dil.	℥iiss.
Chlorodyni	℥iiiss.
Spt. vini rect.	℥ij.
Syrupi	℥x.
Aquam ad	℥lxxx.

Dose: A teaspoonful.

A Household Liniment

Ol. olivæ	℥xj.
Ol. terebinthinæ	℥xj.
Camphoræ	℥iiss.
Spt. methylat.	℥iv.
Liq. ammoniæ	℥ix.

Chilblain-liniment

114

(syn. *Chilblain, Rheumatism, Neuralgia, and Sprain Ointment*)

Acidi carbolici crystal.	℥ss.
Camphoræ	℥ss.
Olei cajuputi	℥ss.
Pulv. opii	℥j.
Pulv. capsici	℥ss.
Lanolini	℥ij.
Adipis	℥xij.

N.B.—Not to be applied where there is broken skin.

122

Olei terebinthinæ	℥ij.
Olei viridis	℥j.
Linim. camphoræ ad	℥j.

123

Lin. belladonnæ	℥ij.
Lin. aconiti	℥j.
Acidi carbolici	♏x.
Collod. flexilis	℥j.

124

Liq. plumbi subacet.	℥j.
Glycerini	℥iss.
Acid. sulphurosi	℥ij.
Tr. opii	℥j.
Spt. camphoræ	℥ss.
Aquam ad	℥j.

125

Acid. acetic. glac.	℥j. (pond.)
Ol. camph. essent.	℥xvj. (pond.)
Rad. anchusæ	q.s.

126

Acid. acet. fort.	℥iv.
Liq. plumb. acet. fort.	℥ij.
Spt. camphor.	℥ij.
Lin. belladon.	℥ss.
Tr. capsici	℥ij.

127

Camphor	℥j.
Liq. ammon. fort.	℥j.
Ol. cajuput.	℥ij.
Spt. methylat.	℥x.
Tr. aloes co.	℥ss.

M. ft. lin.

Hunn's Liniment
(An Australian remedy)

Oil of elder	℥ij.
Oil of thyme	℥j.
Camphor	℥j.
Spirit of camphor	℥ij.
Oil of turpentine	℥iss.
Sweet oil	℥iss.

Lin. Methyl. Salicylatis Co.
(Glasgow Formulary)

Menthol	℥iv.
Chloral hydrate	℥iv.
Alcohol	℥j.
Tincture of cannabis indica	℥j.
Essential oil of camphor	℥iiss.
Methyl salicylate to	℥x.

Rub together the menthol, chloral hydrate, and extract of cannabis

indica, and dissolve in the oil of camphor and methyl salicylate; set aside for seven days, and filter.

Lumbago-liniment

Lin. aconiti	℥ss.
Lin. belladonnæ	℥ss.
Chloroformi	℥ss.
Olei terebinthinæ	℥ss.
Lin. camphoræ	℥j.

Lin. Phenol et Camphoræ Co.
Midge-application

Olei eucalypti	℥j.
Acidi carbolici	♏x.
Spt. camphoræ	℥ss.
Lin. camphoræ co.	℥ss.
Lin. saponis	℥ss.

Lin. Potassii Iodidi cum Sapone
(James Haddock)

Coconut oil	16	parts by weight
Caustic potash	5	,, ,,
Water	20	,, ,,
Glycerine	16	,, ,,
Iodide of potassium	4	,, ,,
Water	4	,, ,,

Finished product to weigh 40 parts.

Process.—In a tared dish, large enough to allow for frothing, dissolve the caustic potash in the first portion of water, on a sand-bath. Into this solution strain the coconut oil, previously melted, apply heat until saponification is completed, add the glycerine, and evaporate until almost reduced to the required weight. Dissolve the iodide in the remainder of the water, add to the contents of the dish, and continue evaporation to the required weight. Strain into a container and allow to cool.

The resulting product is of a pale amber colour and translucent, and readily softens at ordinary skin-temperature, yielding a liniment having just the necessary 'grip' for gentle massage. If it be necessary to have a creamy product, rub the liniment in a mortar.

Ringworm-liniment

Tr. ferri muriatis	℥j.
Tr. iodi	℥j.

Lin. Terebinthinæ
(Foster)

Stir together 1 lb. of B.P. soft soap with 8 fl. oz. of rectified spirit. Practically the whole of the soap is dissolved in an hour or two. Filter, pour a little spirit into the filter to wash out the last traces of soap. Make up to 24 fl. oz., and call this *Sapo Mollis Liquidus*.

To make the liniment take

Sapo. mollis liq.	℥ivss.
Aquæ	℥viiiss.

Mix in a 32-oz. bottle.

Camphor	℥ij.
Oil of turpentine	℥xxvj.

Dissolve and add in four parts to the soap solution, shaking well after each addition.

(W. A. Knight)

Solution of potash B.P.	3 fl. oz
Oleic acid	7 fl. dr.
Oil of turpentine	13 fl. oz:
Camphor	1 oz.
Distilled water to make	1 pint

Mix the solution of potash with an equal quantity of water in a bottle, add the oleic acid previously mixed with 3 oz. of oil of turpentine, and mix by gently inclining the bottle up and down (violent shaking at this stage produces excessive frothing).

An emulsion is at once formed, to which the remaining oil of turpentine (with the camphor dissolved in it) may be added in quantities of 1 oz. or more at a time, gently shaking after each addition. Finally, mix with enough distilled water to produce a pint.

The result is a thick creamy emulsion, whiter than the usual product, and containing the pharmacopœial percentage of active constituents.

Whooping-cough Liniment

Olei caryophylli . .	℥ss.
Olei eucalypti . . .	℥ss.
Olei succini rect. . . .	℥j.
Lin. camphoræ ad . .	℥vj.

Liq. Ammonii Acetatis Fort.

(1) B.P. 1885

Ammonium carbonate .	15½ oz.
Acetic acid . . .	50 fl. oz.
	or a sufficiency
Distilled water to .	60 fl. oz.

Crush the carbonate and add it gradually to 45 oz. of the acid, then add more acid until the solution is neutral, then make up to 60 oz. with the water.

This is a 1-to-5 preparation, and contains about 88 gr. of acetate in 1 fl. oz.

(2) 1-to-7

Glacial acetic acid (500) .	4 lbs.
Strong solution of ammonia (·880) .	3 lbs. 11 oz.
Ammonium carbonate	1 oz.
Distilled water to .	160 oz.

Dissolve the carbonate in the acid, add the ammonia solution carefully, and make up to a gallon with water.

This solution is apt to acquire a bad odour and to become brown in colour. It is better, on the whole, to work on the B.P. lines, taking ammonium carbonate ℥viij. and neutralising with a mixture of glacial acetic acid ℥iv., and acetic acid ℥xiv., make up to ℥xx. with distilled water.

Liq. Ammoniæ Aromaticus

(Miss Bedell's cheap dispensing substitute for *Spt. Ammon. Arom.*, B.P.)

Ammonium carbonate .	4 oz.
Strong solution of ammonia	8 fl. oz.
Terpeneless oil of lemon .	13 mins.
Terpeneless oil of nutmeg	54 mins.
Alcohol (90-per-cent.) .	6 fl. oz.
Distilled water .	149 fl. oz.

Dissolve the oils in the spirit, and add to the aqueous solution of ammonium carbonate and ammonia.

Liq. Antimonii Chloridi

(MacDonald and Hill's Formulas)

B.P. Character

Antimonious chloride	132 gr.
Hydrochloric acid, B.P.	3 fl. dr.
Solution of persulphate of iron, B.P. . .	½ fl. dr.
Distilled water to make .	1 fl. oz.

Mix and dissolve.

Colourless

Antimonious chloride	132 gr.
Hydrochloric acid, B.P. .	3 fl. dr.
Distilled water to make .	1 fl. oz.

This gives a clear water-white solution having a specific gravity of about 1·290.

The colourless solution may also be made as follows:—

Antimonious oxide, Sb_2O_3	84 gr.
Hydrochloric acid, B.P. .	5 fl. dr.
Distilled water to make .	1 fl. oz.

Liquor Arsenici Chlorophosphici

(*Sieker's Solution of Chlorophosphide of Arsenic*)

Acidi arseniosi . .	gr. xv.
Acid. hydrochloric. dil. .	℥iij.
Aquæ destillatæ . .	℥vij.
Solve et adde	
Acid. phosphoric. dil. .	℥j.

Liq. Bismuthi Tartratis

(*Morson and Harpham*)

Bismuth tartrate in scales . . .	1,040 grains
Chloroform . .	20 minims
Alcohol (90-per-cent.)	40 minims
Distilled water to .	20 fl. oz.

Dissolve the tartrate in 10 oz. of the water, add the alcohol and chloroform, previously mixed, and make up to 20 oz. with the water.

This solution has the advantage over the citrate solution of being compatible with alkalies and citric and tartaric acids, hence it is better for compounding solutions such as the following (*C. & D.*, 1912, II., 947):—

Elixir Bismuthi Tartratis

Bismuth tartrate scales	300 grains
Distilled water	4 fl. oz.
Aromatic elixir to	20 fl. oz.

Prepare a solution of bismuth tartrate as directed on p. 896, and add the other ingredients *secundum artem.*

Elixir Pepsini et Bismuthi Tartratis

Bismuth tartrate scales	300 grains
Stronger glycerine of pepsin	2½ fl. oz.
Alcohol (60-per-cent.)	1 fl. oz.
Simple elixir to	20 fl. oz.

Prepare a solution of bismuth tartrate as directed on p. 896, and add the other ingredients *secundum artem.*

Elixir Pepsini et Bismuthi Tartratis c. Strychninâ

Bismuth tartrate scales	300 grains
Stronger glycerine of pepsin	2½ fl. oz.
Solution of strychnine hydrochloride	½ fl. oz.
Alcohol (60-per-cent.)	1 fl. oz.
Simple elixir to	20 fl. oz.

Prepare a solution of bismuth tartrate as directed on p. 896, and add the other ingredients *secundum artem.*

Elixir Pepsini et Bismuthi Tartratis c. Ferro

Bismuth tartrate scales	300 grains
Pepsin	160 grains
Glycerine	1½ fl. oz.
Distilled water	2 fl. oz.
Iron and ammonium citrate	300 grains
Alcohol (60-per-cent.)	1 fl. oz.
Simple elixir to	20 fl. oz.

Prepare a solution of bismuth tartrate as directed on p. 896, and add the other ingredients *secundum artem.*

Elixir Pepsini et Bismuthi Tartratis Co.

Bismuth tartrate scales	300 grains
Stronger glycerine of pepsin	2½ fl. oz.
Morphine acetate	9 grains
Diluted acetic acid	20 minims
Solution of strychnine hydrochloride	96 minims
Diluted hydrocyanic acid	192 minims
Alcohol (60-per-cent.)	1½ fl. oz.
Tincture of cudbear	½ fl. oz.
Simple elixir to	20 fl. oz.

Prepare a solution of bismuth tartrate as directed on p. 896, and add the other ingredients *secundum artem.*

Mistura Bismuthi Tartratis Co.

Bismuth tartrate scales	800 grains
Chloroform	80 minims
Alcohol (60-per-cent.)	2 fl. oz.
Solution of strychnine hydrochloride	300 minims
Diluted hydrocyanic acid	320 minims
Tincture of cudbear	½ fl. oz.
Distilled water to	20 fl. oz.

Prepare a solution of bismuth tartrate as directed on p. 896, and add the other ingredients *secundum artem.*

Mistura Bismuthi Tartratis Co. c. Pepsino

Bismuth tartrate scales	800 grains
Stronger glycerine of pepsin	2½ fl. oz.
Solution of strychnine hydrochloride	300 minims
Chloroform	80 minims
Alcohol (60-per-cent.)	2 fl. oz.
Tincture of cudbear	½ fl. oz.
Diluted hydrocyanic acid	320 minims
Distilled water to	20 fl. oz.

Prepare a solution of bismuth tartrate as directed on p. 896, and add the other ingredients *secundum artem*.

Liquor Bromidi Co., G.F.
(*Bromochloral Compound*)

Potassium bromide and chloral hydrate, of each	ʒxxj. gr. xxxvj.
Extract of cannabis indica	gr. xss.
Extract of hyoscyamus	gr. xss.
Tincture of orange	ʒx.
Glycerine	ʒxv.
Water to	ʒx.

Rub the chloral hydrate with the extracts until a fine green homogeneous powder is produced, and dissolve this in the tincture. Dissolve the potassium bromide in the water and glycerine, add to the chloral-hydrate solution, mix well, and filter.

ʒj. = gr. xv. each potassium bromide and chloral hydrate.

Dose: ʒss. to ʒij.

Liq. Chlori Co., U.S.P.
(Syn. *Chlorine Water, Aqua Chlori, U.S.P.* 1890)

Potassium chlorate	5 gm.
Hydrochloric acid	18 c.c.
Distilled water to	1,000 c.c.

Dilute the acid with water 20 c.c. and add to the chlorate in a 2-litre flask, which close; heat gently, and when reaction ceases add a litre of water in two portions, shaking well after each addition.

Liquores Cresolis

Cresol solutions which mix approximately clear with water have become popular consequent upon the introduction of *lysol* (p. 407), the patent for which has expired. The formulas given in the specification are:—

1

Tar oil	100 grams
Linseed oil	100 grams
Caustic potash solution (1 in 2)	75 grams
Alcohol	6 grams

Boil in an apparatus fitted with a reflux condenser till completely saponified.

2

Tar oil	40 grams
Common resin	10 grams
Caustic potash solution	70 grams
Alcohol	70 grams

Liq. Cresolis Co., U.S.P.

Cresol	500 grams
Linseed oil	350 grams
Potassium hydroxide	80 grams
Water to make	1,000 grams

Dissolve the potassium hydroxide in 50 grams of water in a tared dish, add the linseed oil, and mix thoroughly. Then add the cresol, and stir until a clear solution is produced, finally adding sufficient water to make the finished product weigh 1,000 grams.

Liq. Cresoli Saponatus, Ph.G.

Linseed oil	120
Potassium hydroxide	27
Water	41
Alcohol (95-per-cent.)	12
Crude cresol	200

All by weight. Dissolve the potash in the water and shake the

linseed oil with the solution; add the alcohol, and continue to shake until the oil is saponified completely (keeping the mixture at room temperature); then add the cresol, and shake until it is dissolved. The product should be of sp. gr. 1·038 to 1·041, and other tests are prescribed.

Liq. Kresoli Saponatus, Ph. Neder.

Soft soap	50
Crude cresol	50

Heat the soap on a water-bath, and mix the cresol with it, then add gradually with constant agitation

Water	100

Cresol Compound (*Sapo Cresolis Liquidus*), *Glasgow Formulary*

Cresol (pale)	50
Soft soap, B.P. (or linseed-oil soap)	50

Mix in the cold, and filter.

As commercial cresol contains naphthalin, these preparations do not become soluble until they are set aside for a few months and the naphthalin has had time to precipitate.

Liq. Euonymini et Pepsini

(*Glasgow Formulary*)

Extract of euonymus, B.P.	80 gr.
Pepsin (scale)	160 gr.
Dilute hydrochloric acid	175 mins.
Alcohol (45-per-cent.)	ʒiij.
Chloroform-water to	ʒx.

Compare with p. 674.

Liq. Ferri Chloridi, U.S.P.

Bright iron wire cut small	125 gm.
Hydrochloric acid	680 gm.
Nitric acid	65 gm.
Distilled water	a sufficiency

Prepare in similar manner to liq. ferri perchlor., B.P.

'Lock Salmon'

'Lock salmon' is commonly sold in Staffordshire and the mining and colliery districts of Yorkshire and elsewhere. In the latter parts a favourite domestic remedy is a pennyworth of ipecacuanha-wine, a pennyworth of syrup of squill, two-pennyworth of syrup of foxes' lungs, and a pennyworth of 'lock salmon,' or 'luxomen,' and for the last item Sheffield district chemists give syrup of tolu. Elsewhere it is interpreted lac ammoniaci (mist. ammoniac. is supposed to be *the* thing), but syr. tolutanus is usually given, or, if the customer wants *red* lock salmon, syr. rhœados; while in Hull oxymel scillæ is generally sold for lock salmon.

Liquor Papaini et Iridini

	I	II	III
Papain.	ʒv. ϑj.	ϑviij.	ϑviij.
Iridin.	ʒij.	ϑviij	ϑviij.
Glycerin.	ʒiv.	ʒij.	ʒv.
S.V.R.	ʒij.	—	ʒv.
Tr. cinnam.	ʒij.	—	—
Tr. cardam.	ʒij.	—	—
Vin. xerici	—	ʒv.	—
Potass. carb.	—	—	ʒij.
Aq. ad	ʒxx.	—	ʒxx.
Aq. chlorof. ad	—	ʒxx.	—

In the case of I. and II. (B.P.C.) macerate for seven days and filter. In III. (which is G.F. approximately) dissolve the carbonate in 8 oz. of water, triturate the iridin with this, and warm until dissolved. Separately mix the papain with the glycerine, previously warmed. Mix the solutions with the spirit, and set aside for a week, then decant: wash the residue with 2 oz. of water and filter into the decanted portion.

Midge-preventive

Glycerini	℥j.
Tr. absinthii	ʒiij.
Thymolis	gr. j.
Aq. coloniensis ad	ʒij.

Apply to the neck, face, and ankles with cotton-wool.

Dandruff-lotions

7

Acid. salicylici	ʒij.
Ol. ricini	ʒiij.
Spt. vini rect. ad	℥vj.

Add sufficient perfume before making up.

8. *Chloral and Tannin Lotion*

Chloral hydrate	ʒij.
Tannic acid	ʒj.
Tartaric acid	ʒj.
Castor oil	ʒij.
Essence of violet	℥ss.
Alcohol (90-per-cent.) to	℥xvj.

Dissolve the first four ingredients in the alcohol and add the perfume.

No. 8 is said to produce a preparation similar to 'Captol,' a German dandruff-remedy.

Hand and Toilet Lotion

(*Non-sticky, Non-greasy, and Non-irritating*)

Tragacanth	ʒij.
Quince-seed	ʒxv.
Borax	ʒvj.
Boric acid	ʒviij.
Glycerine	℥x.
Alcohol	℥x.
Perfume and colour of each	a sufficiency
Sodium benzoate	ʒiij.
Boiling water	℥lxxx.
Water to	℥cxxiv.

Dissolve the tragacanth in 32 oz. of water, using a little of the alcohol to wet the gum, and stirring until dissolved or the mixture becomes homogeneous. Steep the quince-seed in the boiling water for four hours, stirring frequently; then strain carefully. Dissolve the borax, sodium benzoate, and boric acid in the remainder of the hot water. Add the perfume and glycerine dissolved in the alcohol, and finally the tragacanth and quince-seed mucilages, which have previously been mixed, portion by portion; shaking after each addition, in order to get a thoroughly homogeneous mixture. The consistency may be varied by addition of water.

Another

Tragacanth	℥j.
Witch-hazel distillate	ʒviij.
Glycerine	℥viij.
Alcohol (90-per-cent.)	ʒviij.
Simple tincture of benzoin	ʒss.
Carbolic acid	℥j.
Oil of bergamot	♏x.
Cologne oil	♏x.
Distilled water to	℥cxxviij.

Macerate the tragacanth in 64 oz. of water for twenty-four hours. Add first the oils, then the other ingredients to the alcohol, and pour this mixture into the tragacanth and water. Let stand for twelve hours more, shaking at intervals, then strain through cheese-cloth.

Phillipson's Lotion

Glacial acetic acid	ʒiss.
Simple tincture of benzoin	ʒiss.
Spirit of camphor	ʒiss.
Rectified spirit to	℥iij.

Used by rubbing on the face three times a day to prevent double chin and similar adipose complaints.

Skin-balm

Seminis cydoniæ	ʒij.
Aquæ	℥x.
Glycerini	℥v.
Acidi borici	℥ss.
Spt. rectificati	℥iiss.
Olei geranii	♏viiss.
Liquor. rosæ	ʒss.
Liq. hamamelid. dest.	ʒij.

Skin-lotion

Zinci oxidi	ʒiv.
Calamini lev.	ʒx.
Sulphur. præcip.	ʒiij.
Bismuth. carb.	ʒiij.
Glycerini	ʒvj.
Aq. coloniensis	℥ij.
Aq. calcis	℥iij.
Pulv. amyli	℥iv.
Aquam ad	℥xxxvj.

Mosquito-lotion

Formalin	ʒxv.
Xylol	ʒv.
Acetone	ʒiv.
Canada balsam	ʒj.
Perfume	a sufficiency

Shake the bottle and apply a little of the lotion to the mosquito-bite by means of a small piece of cotton-wool.

Antiseptic Rubber-glove Lubricant

(J. T. Harbold)

Tragacanth	ʒj.
Boric acid	ʒiv.
Formaldehyde	ʒj.
Oil of gaultheria	♏v.
Oil of rose-geranium	♏iij.
Alcohol	ʒiv.
Water	ʒxxiv.

Dissolve the tragacanth in the water in which the boric acid has previously been dissolved. Dissolve the oils in the alcohol, and add this solution portion by portion to the mucilage of tragacanth, shaking the mixture after each addition. Lastly, add the formaldehyde.

This lubricant may also be used for surgical instruments, catheters, and sounds.

To Clean Marble

Cream of tartar	ʒj.
Oxalic acid	ʒj.
Kieselguhr	ʒij.

Make into a paste with water, smear over the stained part, leave on for a few hours, then wash off with water, and polish.

Metal-polishes

Paste

Precipitated silica	10 lbs.
Kieselguhr	4 lbs.
Crude oleic acid	20 lbs.
Paraffin wax	4 lbs.
Oil of mirbane	½ oz.

Melt the paraffin wax with the oleic acid, then grind with the other ingredients under edge-runners.

Liquid

Putty-powder	6 oz.
Kieselguhr	10 oz.
Bath brick, in fine powder	2 oz.
Indian red	10 oz.
Emery, in finest powder	1 oz.
Rottenstone	1½ oz.

Mix the powders well together and add gradually—

Spirit	1½ pint
Turpentine	1 pint
Paraffin	5 pints
Solution of ammonia	1 pint
Oil of citronella	½ oz.

Lung-tonic

41

Ess. caryophylli	ʒj.
Ess. senegæ	ʒj.
Vin. ipecac.	ʒj.
Oxymel scillæ ad	ʒvj.

Adult dose: ʒj. to ʒij.

42

(For Coughs, Colds, Asthma, and Bronchitis)

Mellis	lb. iv.
Theriac. nig.	lb. iv.
Aceti	ʒxx.

Simmer for fifteen minutes, strain and when cold add

Inf. marrubii	ʒxx.
Inf. tussilaginis	ʒxx.
Ess. menthæ pip.	ʒss.
Ess. caryophylli	ʒss.
Vin. ipecac.	ʒiv.

43

Acet. ipecac.	ʒiv.
Chloroformi	ʒj.
Ol. anisi	♏xx.
Ol. menth. pip.	♏x.
Ol. sassafras	♏x.
Tr. capsici	ʒss
Syr. scillæ	ʒiv.
Theriac. nig.	ʒviij.
Syrup. ad	ʒxL.

Anæmia-mixture

Ferri et ammon. cit.	ʒij.
Spt. chloroformi	ʒj.
Aquam ad	ʒvj.

ʒss. ter die.

Anti-dyspepsia Mixture

Bismuthi carb.	ʒj.
Sodii bicarbonat.	ʒij.
Tr. cardam. co.	ʒij.
Tr. nucis vom.	ʒj.
Chloroformi	ɱvj.
Inf. gentianæ co. conc.	ʒj.
Acid. hydrocyan. dil.	ɱxx.
Aq. anethi ad	ʒviij.

Dose: ʒj.

Tonic Aperient Mixture

14

Acid. sulphurici dil.	ʒiss.
Magnesii sulphatis	ʒiiss.
Quininæ sulphatis	gr. x.
Elix. aromat. (B.P. Codex)	ʒiv.
Aquam ad	ʒviij.

One tablespoonful three times a day.

Asthma-mixture

Potassii iodidi	gr. xlviij.
Ammonii chloridi	℈viij.
Spt. ætheris	ɱCLX.
Tr. lobeliæ	ɱCLX.
Tr. stramonii	ɱCLX.
Vini ipecacuanhæ	ʒij.
Aq. chloroformi ad	ʒviij.

Dose: A tablespoonful thrice daily in water.

22

Aceti scillæ	ʒiss.
Liq. ammon. acet. conc.	ʒiss.
Tr. camph. co. (sine opio)	ʒij.
Spt. ætheris	ʒi.
Aquam ad	ʒviij.

One tablespoonful three times a day.

Backache and Kidney Mixture

Ess. menth. pip.	ʒi. ɱxv
Tr. aconiti	ʒss.
Spt. camphoræ	ʒss.
Spt. æth. nitrosi	ʒviij. ʒiij.
Spt. ammon. co.	ʒviij. ʒiij.
Aq. chlorof. ad	ʒccc.

Ft. mistura.

Mistura Benzol

Benzol	ɱlxxx.
Alcohol (90-per-cent.)	ʒss.
Spirit of chloroform	ʒiij.
Tragacanth mucilage to	ʒviij.

Dose: ʒss. every three hours in lemonade.

Mistura Bismuthi Acida
(Dr. Beddie)

Liq. bismuthi (Schacht)	ʒss.
Acid. nitro-hydrochlor. dil.	ʒss.
Acid. hydrocyanic. dil.	ɱxxx.
Tr. nucis vomicæ	ɱxxx.
Tr. aurantii	ʒj.
Inf. calumbæ conc.	ʒj.
Glycerini	ʒss.
Aquam ad	ʒiij.

The mixture is well known in Fraserburgh and district as the prescription of the late Dr. Beddie. It is not and has never been a proprietary article. The original maker and first vendor was the late Mr. Robert Burnett, who dispensed it to local prescriptions.

Bismuth Magnesia Stomach-mixture

Tr. zingib. fort.	ʒj.
Bismuth carb.	℈iv.
Inf. quassiæ conc.	ʒij.
Spt. ammon. arom	ʒiij.
Mag. carb. levis	℈ij.
Aq. chlorof. conc.	ɱlxxx.
Aq. menth. pip.	ɱxcvj.
Aquam ad	ʒiv.

Compound Blood-medicine (103)

Ferri amm. cit.	gr. v.
Potassii iodidi	gr. iiss.
Sodii sulphat.	ʒss.
Aquam chlorof. ad	ʒss.

ʒss. ex aq. ʒss. t.d.s. hor. ss. post cib.

Blood-mixture

44

Ferri et ammon. cit.	ʒij.
Potassii iodidi	ʒj.
Syr. zingiberis	ʒj.
Aquam ad	ʒviij.

45

Magnesii sulphatis . . ʒss.
Potassii bicarbonat. . ʒiss.
Potassii iodidi . . . gr. xvj.
Dec. sarsæ co. conc. (1–4) ℥j.
Aquam ad . . . ʒviij.

46

Magnesii sulphatis . . ʒvj.
Acid. nitro-muriat. dil. . ʒiss.
Spt. chloroformi . . ʒiss.
Inf. gentianæ ad . . ʒvj.

ʒss. ter in die.

47

Ferri ammonio-citratis ʒij. ʒij.
Potassii iodidi . . ʒiv.
Syrupi simplicis . . ʒiv.
Aquam ad . . . Oiv.

ʒss. t.d.s.

Blood-purifier

94

Potassii iodidi . ʒix. gr. xxxvj.
Potassii bicarbonatis . ʒxij.
Tr. nucis vomicæ . . ʒiss.
Dec. sarsæ co. conc. . ʒix.
Aquam ad . . . ʒlxxij.

A tablespoonful thrice daily.

95

Sodii potassio-tartratis . ʒiss.
Dec. sarsæ co. conc. . ʒiij.
Aq. chloroformi ad . . ʒvj.

ʒss. t.d.s.

96. *Blood-purifying Mixture*

Potassii iodidi . . . ʒss.
Potassii nitratis . . ʒss.
Liq. arsenicalis . . ʒss.
Spt. chloroformi . . ʒij.
Decoct. sarsæ co. conc. . ʒss.
Aquam ad . . . ʒvj.

Dose: A tablespoonful in water thrice daily.

97. *Skin and Blood Mixture*

Ferri ammonio-citratis . ʒj.
Magnesii sulphatis . . ʒij.
Potassii iodidi . . . gr. xxiv.
Tr. zingiber. fort. . . ɱxxiv.
Inf. calumbæ conc. . . ʒss.
Dec. sarsæ conc. . . ʒss.
Aq. chloroformi ad . . ʒvj.

98

Potassii iodidi . . ℈ij.
Potassii chloratis . . ʒss.
Spt. chloroformi . . ʒiij.
Dec. sarsæ co. ad . . ʒviij.

One tablespoonful three times a day.

99

Potassii iodidi . gr. xxxij.
Ferri et ammon. cit. . ℈ij.
Syr. trifol. co. (P., D. & Co.) . . . . ℥j.
Cascara evacuant (P., D. & Co.) . . . ɱxlviij.
Dec. sarsæ co. . . ɱxlviij.
Aq. chloroformi ad . ʒviij.

100

(For Skin-eruptions, Eczema, &c.)

Magnes. carb. . . ʒiij.
Sulphur. præcip. . . ʒiv.
Potass. bitart. . . ʒiij.
Pulv. rad. sarsæ . . ʒij.
Sod. pot. tart. . . ʒiij.
Pulv. sacchar. alb. . . ʒviij.

100A

Potass. iodid. . . ℈ij.
Ferri ammon. cit. . . ʒij.
Magnes. sulph. . . ʒij.
Acid. sulph. dil. . . ʒss.
Syrupi . . . . ℥j.
Aq. chlorof. ad . . ʒviij.

A teaspoonful in water, after food, thrice daily.

101

Spt. chlorof. . . . ʒiij.
Ferri et amm. cit. . . ʒiss.
Mist. sennæ co. . . ʒix.
Pot. citrat. . . . ʒiss.
Aquam ad . . . Oiv.

Blood-tonic (102)

Ferri et ammon. cit. . ʒv. ʒv.
Dec. sarsæ co. conc. . ʒij.
Potass. iodidi . . ʒvij.
Potass. bicarb. . . ʒv. ʒv.
Tr. nucis vom. . . ʒxv.
Liq. arsenicalis . . ʒx.
Aq. chlorof. ad . . ʒCL.

Bronchial Mixture (262)

Ammonii carb.	gr. xviij.
Vin. ipecacuanhæ	ʒj.
Æther. chlorici	ʒss.
Tr. camph. co.	ʒj.
Aquam ad	ʒviij.

One tablespoonful three times a day.

Bronchitis and Lung Tonic (40)

Chlorodyni (sine morph.)	ʒj.
Ex. glycyrrh. liq.	ʒij.
Oxymel. scillæ	ʒvj.
Vin. ipecac.	ʒiij.
Aquam ad	ʒxx.

Bronchitis-mixture

41

Ammon. carb.	℈ij.
Vin. ipecac.	ʒij.
Tr. camph. co.	ʒij.
Tr. scillæ	ʒij.
Inf. senegæ conc.	ʒvj.
Glycerini	ʒiv.
Aquam ad	ʒviij.

42

Vin. antim.	ʒiij.
Vin. ipecac.	ʒiv.
Spt. ammon. arom.	ʒiv.
Glycerini	ʒiv.
Oxymel. scillæ	ʒiv.
Chloroformi	ʒiiiss.
Aquam ad	Ov.

ʒss. ter die tussi urgente.

Children's Bronchial Mixture

Tr. camphoræ co.	ʒvij.
Syr. tolutani	ʒxiv.
Syr. scillæ	ʒvij.
Vin. ipecac.	ʒvj.
Spt. æther. nitrosi	ʒiij.
Liq. ammon. acet. conc.	ʒss.
Syrup. ad	ʒxvj.

Children's Chest Mixture

(*Cough Mixture*, 267)

Ammonii carb.	ʒss.
Ammonii bromidi	ʒj.
Liq. ammon. acet. conc.	ʒij.
Ext. ipecac. liq.	ʒij.
Ext. glycyrrhiz. liq.	ʒss.
Ess. anisi	ʒss.
Syrupi	ʒxxv.
Aq. chloroformi ad	ʒxl.

Dose: A teaspoonful.

Bust-developer

Ferri sulphatis	gr. viij.
Acid. sulphuric. arom.	ʒss.
Spt. rectificat.	ʒj.
Syrupi	ʒiv.
Syr. rhœados	ʒss.
Aquam ad	ʒviij.

Dose: A teaspoonful after breakfast and dinner, and at bedtime. The breasts should be massaged with cold cream or similar unguent in a circular direction for fifteen minutes morning and evening.

Note.—The mixture is apparently a mere placebo, but the original was charged 10*s.* a bottle.

Mistura Carminativa

Gripe-mixture for Infants

Cretæ præparatæ	ʒiss.
Pulv. zingiberis	ʒss.
Magnes. carbonat.	ʒj.
Syrup.® croci	ʒvj.
Tr. zingiberis	ʒvj.
Olei carui	♏xv.
Olei anethi	♏xv.
Olei anisi	♏xv.
Aquam ad	ʒxvj.

24. *Infants' Preservative*

Magnes. carb. levis	ʒij.
Pulv. sacch. alb.	ʒij.
Liq. croci	♏iij.
Ol. anisi, anethi, sassaf., et fœniculi aa.	♏xvj.
Spt. vini rect.	ʒij.
Spt. ætheris nit.	ʒj.
Tr. hyoscyami	ʒj.
Syr. papaveris	ʒiv.
Aquam ad	ʒviij.

Catarrh-mixture

Tr. quininæ ammon.	ʒx.
Tr. rhei co.	ʒss.
Spirit. camphoræ	ʒss.
Syrupum ad	ʒij.

ʒij. ex aquâ.

Catarrh or Cold and Fever Mixture (2)

Potassii citratis	ʒij.
Liq. ammon. acet.	ʒj.
Spt. æther. nitrosi	ʒij.
Syr. aurantii	ʒss.
Aquam ad	ʒvj.

ʒss. quat. qq. horâ.

Chilblain-mixture

128

Calcii lactatis . . . ʒij.
Syr. flor. aurant . . ʒj.
Aquam ad . . . ʒvj.

129

Calcii carb. præcip. . ʒj.
Acidi lactici . . . ʒij. ɱx.
Aq. destillat. ad . . ʒvj.

Dilute the acid with 3 oz. of water, add the carbonate, filter, and make up with water to 6 oz.

Dose: A tablespoonful (= 15 grains of calcium lactate).

Cold and Influenza Mixture

12

Quininæ sulph. . . gr. xij.
Potass. bromid. . . ʒiss.
Acid. hydrobrom. dil. . ʒiss.
Tr. aurant. . . . ʒss.
Aquam ad . . . ʒviij.
ʒj. four hours.

13

Sodii salicylatis . . ʒj.
Glycerini . . . ʒss.
Phenazoni . . . gr. xxiv.
Potassii nitratis . . gr. xxiv.
Chlorodyni . . . ʒj.
Potassii bromidi . . ʒj.
Aquam ad . . . ʒviij.

14

Potassii citratis . . ʒiv.
Tr. camphoræ co. . . ʒiv.
Vini ipecacuanhæ . . ʒiss.
Syr. papaveris . . ʒiv.
Spt. chloroformi . . ʒiss.
Aquam ad . . . ʒvj.
ʒss. every four hours.

15. *Cold-mixture*

Liq. ammon. acet. conc. . ʒiss.
Spt. ammon. aromat. . ʒiv.
Aq. camphoræ ad . . ʒviij.

One tablespoonful three times a day.

16

Liq. ammon. acet. . . ʒiss.
Spt. ammon. aromat. . ʒiv.
Spt. camphoræ . . ɱxx.
Aquam ad . . . ʒvj.
ʒss. t.i.d. ex aquâ.

22

Sodii salicylat. . . . ʒij.
Potass. brom. . . . ʒij.
Aq. cinnam. . . . ʒij.
Tr. card. co. . . . ʒij.
Aq. chlorof. ad . . . ʒviij.

Adult dose: One tablespoonful every four hours

Cold, Chill, and Influenza Mixture (23)

Sodii salicylatis . . gr. x
Potass. bicarb. . . . gr. v.
Ammon. carbonat. . . gr. iv.
Liq. ammon. acet. . . ʒj.
Tr. cinchon. co. . . ɱx.
Spt. chloroform. . . ɱx.
Aquam ad . . . ʒj.

This dose to be taken every four hours.

Diarrhœa-mixture

186

Pulv. cretæ aromat. . ʒiij.
Spt. ammoniæ comp. . ʒx.
Tr. catechu . . . ʒx.
Tr. cardamomi comp. . ʒv.
Tr. opii . . . . ʒj. ɱxl.
Mist. cretæ ad . . ʒxx.

187

Pulv. cretæ aromat. . ʒiss.
Tr. catechu . . . ʒiss.
Tr. zingiberis fort. . . ʒvj.
Tr. opii . . . . ʒviiss.
Tr. cardamomi co. . . ʒiss.
Spt. ammoniæ aromat. . ʒiss.
Aquæ . . . . Oiij.
Chloroformi . . . ʒij.

Dose: One to two tablespoonfuls.

188

Tr. catechu . . . ʒij.
Chlorodyni . . . ʒj.
Acidi carbolici . . ɱxij.
Acidi sulphurici dil. . ʒij.
Spt. camphoræ . . ʒj.
Syrupi . . . . ʒss.
Aq. menthæ piperitæ ad . ʒvj.

Dose: A tablespoonful.

189

Pulv. acaciæ	ʒij.
Pulv. cretæ præp.	ʒij.
Tr. kino	ʒiv.
Tr. camphoræ co.	ʒiv.
Tr. catechu	ʒj.
Syrupi	ʒiv.
Ol. menthæ pip.	♏xxx.
Aquam ad	ʒLX.

190

Pulv. aromatici	ʒiij.
Spt. ammon. aromat.	ʒiij.
Tr. catechu	ʒx.
Tr. cardam. co.	ʒvj.
Tr. opii	ʒj.
Mist. cretæ ad	ʒxx.

191

Ammon. carb.	gr. x.
Pulv. cretæ aromat.	ʒij.
Pulv. acaciæ	ʒj.
Tr. catechu	ʒss.
Tr. opii	ʒj.
Spt. chloroformi	ʒj.
Spt. menth. pip.	ʒss.
Aq. camphoræ ad	ʒvj.

Dose for adults: Two tablespoonfuls.

192

For children, omit tincture of opium from No. 191. Dose for a child of one year, a teaspoonful, and so on in proportion to age.

193

Ammonii carbonatis	ʒiv. ℈ij.
Tr. catechu	ʒvij.
Tr. opii	ʒiss.
Ætheris chlorici	ʒiij.
Olei caryophylli	ʒij. ♏xx
Olei menthæ piperitæ	ʒj. ♏x.
Aquam ad	Ov.

194

Cretæ præparatæ	ʒvj.
Tr. catechu	ʒij.
Essentiæ cinnamomi	ʒiij.
Aquam ad	ʒxL.

SHAKE THE BOTTLE.

DIARRHŒA-MIXTURE.

(P.F., 193)

Dose: 14 years and upwards, one to two tablespoonfuls; 4 years old, two teaspoonfuls; 1 year, one teaspoonful; ½ year, half a teaspoonful; and so on in proportion, according to age, every two, three, or four hours, as the urgency of the case may require. When the mixture is administered to infants or children add a little sugar and water.

N.B.—The following observations from the Government Board of Health demand the most serious attention from every person—

'Looseness of the bowels, however slight, should on no account be neglected. It is by far the most usual forerunner of the disease (CHOLERA), as well as the most important, because in its various degrees it constitutes that stage in which life may be most easily saved.'

Note.—It is important that sellers in Great Britain of diarrhœa-mixtures should observe that the permission of the Board of Customs and Excise to sell them labelled in the above manner, and unstamped, is subject to the condition that the source of the published formula must be stated on the label as illustrated above.

195. *Cordial Diarrhœa-mixture*

Pulv. cretæ aromatici	ʒss.
Pulv. acaciæ	ʒiij.
Tr. opii	ʒj.
Spt. ammonii comp.	ʒij.
Tr. cardamomi comp.	ʒss.
Ætheris chlorici	ʒj.
Aquam destill. ad	ʒviij.

196. *Diarrhœa and Bowel-complaint Mixture*

Acid. sulphuric. aromat.	ʒij.
Chlorodyni	ʒij.
Aquam ad	ʒvj.

Dose: One to two tablespoonfuls.

197

Zinci sulphocarbol.	℈viij.
Bismuthi carbonat.	ʒxiij.
Pulv. tragacanthæ	ʒj.
Ol. cinnamomi	ʒss.
Tr. cardamom. co.	ʒvj. ɱxl.
Tr. catechu aquos.	ʒvj. ɱxl.
Aquam ad	ʒxl.

198. *Diarrhœa or Anti-cholera Mixture*

Cretæ præparatæ	ʒvj.
Sacchari albi	ʒx.
Pulv. gum. acaciæ	ʒvj.
Ol. cassiæ	ʒij.
Pulv. cretæ aromat.	ʒxss.
Pulv. opii comp.	ʒiij.
Tr. catechu	ʒxxxvj.
Spt. ammoniæ comp.	ʒxv.
Aq. chloroformi (B.P. 1885) ad	Cong. j.

199. *Diarrhœa and Cholera Mixture*

Sodii bicarbonat.	ʒv.
Pulv. conf. aromat.	ʒv.
Spt. ammon. aromat.	ʒv.
Cretæ præparat.	ʒj.
Sacchari albi	ʒiss.
Tr. catechu	ʒj.
Tr. opii	ʒiss.
Tr. capsici	ʒj.
Ol. menthæ pip.	ɱxxv
Ol. cinnamomi	ɱxx.
Pulv. tragacanthæ	ʒj.
Aquam ad	ʒxxx.

202

Acid. sulphuric. dil.	ʒiss.
Tr. cardam. co.	ʒj.
Spt. chloroformi	ʒij.
Tr. opii	ɱxl.
Aq. menthæ pip. ad	ʒviij.

ʒj. pro dosis.

200. *Cholera and Diarrhœa Mixture*

Cretæ præparatæ	ʒij.
Olei cassiæ	ʒj.
Ess. menthæ piper.	ʒiij.
Pulv. rhei	ʒss.
Pulv. confect. aromat.	ʒss.
Ammonii carbonatis	ʒj.
Tr. catechu	ʒj.
Tr. rhei	ʒj.
Aq. camphoræ ad	ʒxxxij.

201

Cretæ præparat.	℈v.
Pulv. cretæ aromat.	℈iiss.
Tr. card. co.	ɱlxxx.
Tr. catechu	ʒiij. ɱxx.
Spt. ammon. aromat.	ʒj.
Chlorodyni	ɱl.
Aq. cinnamomi ad	ʒviij.

One tablespoonful three times a day.

202A

Sodii bicarbonatis	ʒv.
Pulv. confect. aromat.	ʒv.
Spt. ammon. aromat.	ʒv.
Tr. catechu	ʒj.
Tr. opii	ʒiss.
Tr. capsici	ʒj.
Ol. menthæ pip.	ɱxxv.
Mist. cretæ ad	ʒxxx.

203

Tr. camph. co.	ʒx.
Pulv. pro mist. cretæ	ʒviss.
Pulv. conf. aromat. (B.P. '85)	ʒviij.
Spt. ammon. arom.	ʒv.
Ol. cassiæ	ɱlxxx.
Aq. cinnam. ad	ʒlxxx.

ʒss. pro dos.

204

Ammon. carb.	ʒj.
Tr. catechu	ʒx.
Ol. caryoph.	ʒij.
Chloroformi	ʒvj.
Ess. menth. pip.	ʒiss.
Tr. opii	ʒiss.
Aq. ad	Ov.

M. ft. mist.

Digestive Mixture

Tr. cardamomi co.	ʒj.
Liq. bismuthi	ʒj.
Magnes. sulphat.	ʒij.
Sodii bicarb.	ʒij.
Ammon. carb.	gr. xxiv.
Tr. nucis vom.	ʒj.
Tr. zingiberis	ʒj.
Aq. chloroformi ad	ʒvj.

Dose: A tablespoonful between meals.

Eczema-mixture (2)

Ferri et ammon. cit.	℈iv.
Liq. arsenicalis	ʒj.
Tr. dioscoreæ	ʒj.
Glycerini	ʒss.
Spt. chloroformi	ʒiss.
Aquam ad	ʒviij.

One tablespoonful three times a day.

Female Corrective Mixture (7)

Ferri et ammon. cit.	ʒiv.
Tr. digitalis	ʒij.
Glycerini	ʒj.
Spt. ammon. aromat.	ʒiiss.
Tr. nucis vomicæ	♏xl.
Aquam ad	ʒvj.

One teaspoonful three times a day.

Mistura Ferri
(J. H. Franklin)

Glucosated iron carbonate	gr. xvj.
Glucose syrup	gr. xvj.
Powdered acacia	℈j.
Tincture of myrrh	ʒss.
Spirit of nutmeg	♏l.
Rose-water to	ʒx.

Reduce the glucosated carbonate of iron to fine powder, triturate with the glucose syrup, and continue the trituration with a few drops of rose-water to form a smooth thin paste; gradually add more of the rose-water, and add the acacia diffused in the tincture of myrrh and spirit of nutmeg, finally making the product measure 10 fl. oz. with rose-water.

(W. A. Knight)

Ferri sulphatis	gr. xxv.
Potassii carbonatis	gr. xxx.
Olei myristicæ	♏v.
Tr. myrrhæ	ʒvss.
Syrupi	♏lxxx.
Mucilaginis acaciæ	ʒj.
Aq. rosæ ad	ʒx.

Dissolve the carbonate in 2 oz. of rose-water in a 10-oz. bottle, add the mucilage, and shake to cover the inside of the bottle entirely; then add the mixed oil and tincture in small portions, shaking very gently after each addition (violent shaking tends to throw out the resin in aggregated nodules); add rose-water up to 7 oz., and with this mix the iron sulphate dissolved in the rest of the rose-water and the syrup.

Mist. Ferri et Digitalis
(Edin. Inf. Phar.)

Tr. ferri perchlor.	ʒij.
Tr. digitalis	ʒj.
Ac. phosph. dil.	ʒiij.
Glycerin.	ʒvj.
Infus. quassiæ ad	ʒvj.

(Sligo County Infirmary)

Tr. ferri perchloridi	ʒij.
Tr. digitalis	ʒj.
Aquam ad	ʒviij.

ʒss. ter die.

Mistura Ferri Laxans
(Miller General Hospital)

Sulphate of iron	3 gr.
Magnesium sulphate	30 gr.
Dilute sulphuric acid	5 mins.
Peppermint-water to	1 fl. oz.

Fever-mixture (3)

Sodii bicarbonat.	℈ij.
Spt. ætheris nit.	ʒiv.
Liq. ammon. acet. conc.	ʒj.
Vin. ipecacuanhæ	ʒss.
Saccharini	gr. ½
Aquam ad	ʒviij.

One tablespoonful thrice a day.

Gout-mixture (40)

Potassii iodid.	ʒss.
Sodii salicylat.	ʒij.
Ext. cascaræ sagradæ	ʒij.
Aq. chloroformi ad	℥viij.

One tablespoonful three times a day.

Gout and Rheumatic Mixture

40

Potassii iodidi.	ʒxv.
Lithii citratis	ʒx.
Potassii bicarbonatis	ʒxv.
Spt. ætheris nitrosi	℥iij. ʒvj.
Vini colchici	ʒxv.
Spt. chloroformi	℥iiss.
Decoct. scoparii conc.	℥vij. ʒj.
Aquam ad	℥lxxx.

41

Potass. iodidi	ʒiij.
Potass. bicarb.	ʒvj.
Sodii salicylat.	ʒvj.
Lithii citratis	ʒiij.
Vin. colchici	ʒvj.
Aq. chloroformi	℥xviij.
Liq. cocci cact.	q.s.
Aquam ad	℥xxxvj.

Dose: Two tablespoonfuls.

42

Hexamethylene-tetramin.	ʒj.
Potass. bicarb.	ʒij.
Potass. citrat.	ʒj.
Vin. colchici	ʒj.
Tr. nucis vomic.	ʒiss.
Tr. buchu	ʒiv.
Aq. chlorof. ad	℥vj.

M. Ft. mist.

℥ss. ex aq. ℥ij. 4tis horis.

43

Potassii iodidi	ʒij.
Potassii bicarb.	ʒvj.
Tr. cimicifugæ	ʒiv.
Tr. gentianæ co.	ʒj.
Aq. chloroformi ad	℥xx.

Cap. ℥j. ter in die.

44

Sodii salicylatis	ʒiv.
Potass. citratis	ʒiv.
Tr. aurantii	℥j.
Aq. chloroformi ad	℥xx.

℥j. every four hours.

Indigestion-mixtures

80B

Sodii bicarbonat.	ʒij.
Bismuthi carb.	ʒij.
Spt. ammon. arom.	ʒiij.
Glycerini	ʒvj.
Pulv. tragac. co.	gr.
Tr. capsici	ʒss.
Acid. hydrocyan. dil.	♏xx.
Aq. chloroform. (B.P. '85) ad	℥vj.

℥ss. pro osis.

82

Liq. bismuthi	ʒiij.
Æther. chloric.	♏xlv.
Tr. nuc. vom.	♏xxiv.
Liq. morphinæ	♏xxiv.
Acid. hydrocyan. dil.	♏vj.
Tr. cardamomi co.	q.s.
Aq. dest. ad	℥vj.

℥ss. pro dosis.

83

Mag. sulphat.	℥ss.
Tr. nucis vom.	ʒiss.
Acid. nit.-mur. dil.	ʒij.
Tr. capsici	♏xl.
Aquam chlorof. (ʒj. in aq. ℥xxv.) ad	℥vj.

℥ss. ter die ante cibos.

88

Sodii bicarb.	℥iv. ʒvj.
Bismuth. carb.	℥j.
Magnes. carb.	℥iss.
Spt. ammon. co.	℥ivss.
Chlorodyni	℥iss.
Aq. chloroformi	℥xxx.
Aq. menth. pip. ad	℥xcvj.

Dose: A tablespoonful every three hours.

89

Mist. bismuth. et pepsin. ʒvj.
Inf. gent. co. conc. . ʒvj.
Aquam ad . . . ℥viij.
Misce.

℥ss. ter in die ex aq. ante cib. sum.

76. *Indigestion-cure*

Pulv. rhei . . . ʒiv.
Aloes socot. . . . ʒij. ʒvj.
Hydrast. canad. . . ʒij.
Sodii bicarb. . . . ʒj. ʒiij.
Sacch. albi . . . ʒj. ʒv.
Spt. vini rect. . . . ʒxvj.
Aquæ . . . . ʒLX.
Ess. menth. pip. . . ʒiij.

Add 1½ fl. oz. of this to a 6-oz. bottle of water.

℥ss. ter die ex aquâ.

77. *Indigestion and Liver Mixtures*

Pepsini . . . . gr. xij.
Glycerini . . . ʒvj.
Tr. nucis vom. . . ʒj.
Acid. nit.-mur. dil. . . ʒiss.
Spt. chloroformi . . ʒj.
Aquam ad . . . ℥vj.

78

Pepsini . . . . gr. xv.
Sodii bicarb. . . . ʒv.
Pulv. zingiberis . . ʒss.
Tr. capsici . . . ʒss.
Ammon. carb. . . ʒj.
Ol. menth. pip. . . ʒss.
Magnes. carb. . . ʒj.
Aquam ad . . . ℥xxx.
Dose: One tablespoonful.

80

Bismuthi carbonat. . . ℈iv.
Pulv. tragac. comp. . ℈iv.
Potass. bicarb. . . ℈iv.
Tr. nucis vomicæ . . ♏XL.
Spt. chloroformi . . ♏lxxx.
Inf. gentian. co. conc. . ʒj.
Aq. menth. pip. ad . ℥viij.
One tablespoonful thrice a day.

80A

Mist. bismuthi sed. . ♏xx.
Ext. casc. sagrad. liq. . ♏x.
Tr. podophylli . . ♏iij.
Pepsini porci . . . gr. j.
Glycerini . . . ♏x.
Aquam chlorof. ad . . ℥ss.
T.d.s. p.c.

79. *Indigestion-mixture and Liver-tonic*

Sodii bicarbonatis . . ʒij.
Spt. chloroformi . . ʒj.
Tr. nucis vomicæ . . ʒj.
Inf. gentianæ ad . . ℥vj.
℥ss. ter in die.

81. *Indigestion and Stomach Mixture*

Sodii bicarb. . . . ʒxij.
Tr. rhei co. . . . ʒiij.
Tr. zingib. fort. . . ʒiij.
Spt. ammon. arom. . ℥iss.
Aq. chloroformi . . ℥xxv.
Aquam ad . . . ℥xlviij.

90

Tr. rhei co. . . . ʒij.
Tr. card. co. . . . ʒij.
Spt. ammon. arom. . . ʒij.
Liq. bismuthi . . . ʒvj.
Aq. chlorof. ad . . ℥viij.
Dose: One tablespoonful every four hours in a little water.

84. *Bismuth Indigestion-mixture*

Bismuth. carb. . . ʒij.
Sodii bicarb. . . . ʒij.
Pulv. rhei . . . ʒss.
Pulv. myrrh. . . . ʒss.
Pulv. acaciæ . . . ʒj.
Syr. zingib. . . . ℥j.
Aq. menth. pip. ad . ℥viij.
℥ss. ex aq. t.d.s. p.c.

Influenza-mixtures

69

Potassii nitrat. . . ʒj.
Ammon. carb. . . ʒj.
Liq. ammon. acet. conc. . ʒiij.
Aq. camphoræ ad . . ℥x.
Dose: Two tablespoonfuls.

70

Ammonii carbonatis	℈ij.
Vini ipecacuanhæ	ʒij.
Liq. ammonii acet. conc.	ʒij.
Aq. camphoræ ad	ʒviij.

71

Phenolis liquidi	♏xvj.
Ammonii carbonatis	gr. xxiv.
Liq. ammonii acet. conc.	ʒj.
Sodii salicylatis	℈iv.
Tr. aconiti	♏xvj.
Tr. aurantii	ʒj.
Aq. chloroformi ad	ʒiv.

Dose: A tablespoonful in water.

72

Potassii nitratis	ʒij.
Syrupi simplicis	ʒiv.
Liq. ammonii acetat. fort.	℥iij.
Tr. aurantii	ʒij.
Spt. ætheris nitrosi	ʒiij. ʒvj.
Aquam ad	Oiv.

73

Spt. ammonii aromat.	ʒiij.
Bals. anisi	℥ij.
Tr. camphoræ co.	ʒij.
Potassii bromidi	ʒj.
Aquam chloroformi ad	ʒvj.

ʒss. quartis horis sumend. vel p.r.n.

74

Potassii bicarbonat.	ʒiss.
Sodii bicarbonat.	ʒiss.
Spt. æther. nitrosi	ʒiij.
Vin. ipecacuanhæ	ʒj.
Chlorodyni	ʒj.
Aquam ad	ʒvj.

A tablespoonful every four hours.

75. *Mistura Phenolis*

The following are the particulars of this popular mixture, as supplied by the Rev. J. E. Woodrow, vicar of Ormskirk:—

Pure phenol, Calvert's No. 1 (prepared for internal use), 24 drops in an 8-oz. bottle of water well mixed. Dose: Two tablespoonfuls three times in twenty-four hours; children, half-dose. One dose will be enough to prevent, three doses will be enough to cure. The dose to prevent should not be taken till the symptoms of influenza (cold chill, pains, &c.) show themselves; then one dose will stop it in less than half-an-hour. Price of the medicine, 3*d.* to 6*d.* (according to the profits of the chemist). The medicine, taken as above, is perfectly harmless, and may be taken by anyone at any time. This recipe was given me by a physician in the West Indies as a sure remedy in malaria and other fevers. I came to the conclusion that influenza was a kind of low fever, and tried the remedy with success. I have now used it in scores of cases without a single failure. If taken when late in the disease, it will remove the fever, but not cure the after-effects, as cough, &c.

76

Potassii bicarb.	℈iv.
Tr. aconiti	♏viij.
Spt. æther. nit.	ʒij.
Vin. ipecacuanhæ	ʒj.
Liq. amm. acet. conc.	ʒij.
Tr. quininæ	♏lxxx.
Sacch. ust.	♏v.
Aq. chloroformi ad	ʒviij.

One tablespoonful three times a day.

78

Tr. quininæ ammon.	ʒj.
Oxymel. scillæ	ʒj.
Aq. camphoræ ad	ʒj.

To be taken every four hours.

81

Phenazoni	℈ij.
Potass. bromid.	ʒiss.
Chlorodyni	ʒij.
Aquam ad	ʒviij.

87

Potass. citrat.	ʒiij.
Liq. ammon. acet.	℥iss.
Tr. aconiti	♏xxiv.
Spt. ætheris nit.	ʒiij.
Vin. ipecac.	ʒj.
Aq. camph. ad	ʒvj.

79. *Influenza-cold Mixture*

Sodii bicarbonat.	ʒiss.
Ammonii bromidi	ʒiss.
Phenazoni	℈j.
Tr. quininæ ammon.	ʒiij.
Mist. gentianæ ad	ʒvj.

℥j. ter quaterve die.

80. *Influenza and Cold Mixture*

Ammon. carb.	ʒiv.
Liq. ammon. acet. conc.	℥iiss.
Succi limonis	℥iiss.
Glycerini	℥iiss.
Inf. amari	℥j.
Aq. camphoræ	℥xx.
Aquam ad	℥lxxx.

82. *Influenza, Cold, and Fever Mixture*

Potassii nitratis	ʒj.
Vin. ipec. et spt. æth. nit. aa.	℥iv.
Liq. ammonii acetat.	℥xvj.
Aq. chloroformi	℥x.
Aquam ad	℥c.

Dose for adults: ℥ss. to ʒj.

83

Ammon. chlorid. pur.	ʒiij.
Ol. cassiæ	ʒss.
Spt. camphoræ	ʒiij.
Tr. chloroformi co. (B.P. 1885)	ʒij.
Mucil. farinæ ad	℥vj.

Ft. mistura.

℥ss. ex aq. calid. 2, 3, 4tis horis.

84. *Influenza and Cold Cure*

Sodii salicyl.	℈iv.
Tr. aurant.	ʒj.
Liq. ammon. acet.	ʒvj.
Spt. camph.	♏x.
Aquam ad	℥viij.

85. *Influenza and Colds Mixture*

Acid. carbol. liq.	♏xxiv.
Inf. quassiæ conc.	ʒj.
Liq. rosæ dulc.	ʒss.
Ess. menthæ pip.	♏x.
Aquam ad	℥viij.

Dose: One tablespoonful every four hours.

77

Tr. camph. co., tr. quin. amm., spt. æth. nit., et syr. tolut. aa. pt. æq.

86. *Influenza and Fever Mixture*

Potass. citrat.	℥ss.
Liq. ammon. acet. conc.	ʒiij.
Tr. camph. co.	℥ss.
Vin. ipecac.	ʒj.
Spt. chloroform.	ʒj.
Aquam ad	℥viij.

M. Ft. mist.

℥ss. om. tert. hor. ex aq. sumend.

Kidney-medicines

A number of proprietary medicines for kidney-troubles were reported upon by the *British Medical Journal*, 1906, ii., 1645, and 1907, i., 213.

7. *Kidney-cure*

Potass. bicarb.	ʒiv.
Potass. acetat.	ʒiv.
Spt. æther. nitros.	ʒiv.
Tr. hyoscyami	ʒiv.
Inf. buchu ad	℥viij.

℥ss. every four hours.

8. *Kidney-mixture*

Potass. citrat.	℈iv.
Lithii citrat.	℈j.
Inf. buchu conc.	ʒij.
Inf. chiratæ conc.	ʒij.
Glycerini	ʒij.
Acid. salicylici	gr. iv.
Spt. chloroformi	ʒss.
Aquam ad	℥vj.

9

Potass. bicarbonat.	ʒiij.
Succ. taraxaci	ʒiij.
Inf. chiratæ	℥iss.
Elixir saccharini	ʒj.
Aq. chloroformi ad	℥viij.

One tablespoonful three times a day.

Liver-mixtures

20 (Sir James Paget's)

Sodii sulphatis	ʒv.
Sodii et potass. tart.	ʒv.
Tr. nucis vom.	ʒvj. ♏xl.
Tr. rhei co.	ʒv.
Aq. menth. pip. ad	ʒlxxx.

21. *Liver-tonic*

Acid. nitro hydrochlor. dil.	ʒix.
Liq. strychninæ hydrochlor.	ʒss.
Succi taraxaci	ʒiij.
Inf. quassiæ conc.	ʒiij.
Syrupi	ʒiij.
Aq. chloroformi (B.P. '85) ad	ʒxxxvj.

72

Sodæ tartaratæ	ʒj. ℈viij.
Sodii bicarbonat.	ʒj.
Dec. aloes co. conc. (sine croco)	ʒss.
Spt. chloroformi	ʒij.
Inf. calumbæ conc.	ʒij.
Aquam ad	ʒviij.

ʒss. pro dosis.

73

Acid. nit.-mur. dil.	♏lxxx.
Tr. nucis vom.	℈ij.
Liq. taraxaci	ʒiv.
Tr. gent. co.	ʒiv.
Aq. chloroformi ad	ʒviij.

ʒj. pro dosis.

74

Acid. nitro-mur. dil.	ʒiij.
Tr. nucis vom.	ʒiss.
Tr. rhei co.	ʒvj.
Succi taraxaci	ʒxij.
Glycerini	ʒxij.
Aq. chlorof. ad	ʒlxxij.

ʒss. ter die ex aq. p.c.

71. *Digestive Liver-tonic*

Acid. phosphoric. dil.	ʒxiiiss.
Acid. nitro-mur. dil.	ʒxiiiss.
Inf. gentianæ co. conc.	ʒxxvij.
Liq. aurantii	q.s. ad color.
Glycerini	ʒxxvij.
Aquam ad	ʒlxxx.

ʒss. pro dosis.

70. *Digestive Tonic.*

Sodii bicarbonat.	ʒv.
Ammonii chloridi	ʒiiss.
Ess. menthæ pip.	ʒss.
Tr. capsici	ʒss.
Liq. aurantii	q.s. ad color.
Inf. aurantii co. conc.	ʒiv.
Inf. gentianæ co. conc.	ʒiv.
Aq. chloroformi ad	ʒlxxx.

ʒss. ter die.

22. *Bilious and Liver Mixture*

Acid. nitro-hydrochlor. dil.	ʒj.
Inf. gentian. co. conc.	ʒss.
Ext. taraxaci liq.	ʒss.
Tr. nucis vomicæ	ʒj.
Tr. podophylli (B.P. '85)	♏xl.
Tr. zingiberis fort.	ʒss.
Aq. chloroformi ad	ʒvj.

23. *Digestive and Liver Tonic*

Liq. bismuthi	ʒss.
Tr. nucis vomicæ	ʒj.
Ætheris chlorici	ʒj.
Tr. capsici	♏xvj.
Inf. calumbæ ad	ʒviij.

24. *Liver and Indigestion Mixture*

Pulv. rhei	15
Sodii bicarb.	60
Glycerini	60
Elixir cascara	135

Ft. mistura.

25

Potass. bicarb.	ʒij.
Tr. nucis vom.	ʒj.
Liq. bismuthi	ʒss.
Vin. ipecac.	ʒiss.
Tr. chlorof. co. (B.P. '85)	ʒij.
Aquam ad	ʒvj.

ʒss. ex aq. ante cibos.

Neuralgia or Neuralgic Mixtures

151

Ammon. chloridi	ʒiss.
Quin. sulph.	gr. xij.
Acid. hydrochlor. dil.	♏xx.
Tr. gelsemii	ʒj.
Syrupi	ʒij.
Aq. chloroformi	ʒiij.
Liq. cocci cact.	q.s.
Aquam ad	ʒvj.

150

Spt. ætheris . . . ♏L.
Liq. morphinæ hydroch. . ʒvj.
Acid. hydrocyanic. dil. . ♏xxxvj.
Aq. menth. pip. conc. . ʒss.
Quininæ sulph. . . ℈v.
Acid. hydrobrom. dil. . ʒj.
Tr. gelsemii . . . ʒj.
Spt. chloroformi . . ʒvj.
Sacch. ust. . . . q.s.
Aquam ad . . . ʒxxx.
ʒss. quartis horis.

152

Tr. gelsemii . . . ʒiss.
Potass. bromidi . . ʒxviij.
Tr. belladonn. . . ʒvj.
Quininæ sulph. . . gr. cxliv.
Acidi hydrobrom. dil. . ʒvj.
Aq. chlorof ad . . ʒxxxvj.

153

Ammon. bromid. . . ʒx.
Ferri et ammon. cit. . ʒxv.
Potass. bicarbonatis . ʒxv.
Tr. gelsem. semp. . . ʒiiss.
Spt. chloroformi . . ʒiiss.
Aquam ad . . . ʒlxxx.
ʒj. ter in die.

154

Ammonii chloridi . . ʒiij.
Spt. chloroformi . . ʒxviij.
Tr. gelsemii . . . ʒxviij.
Tr. quininæ . . . ʒivss.
Tr. aconiti . . . ʒij.
Aq. camphoræ ad . . ʒxxiv.

155

Liq. ferri perchloridi . ʒij.
Tr. hyoscyami . . ʒiij.
Spt. chloroformi . . ʒiij.
Aquam ad . . . ʒvj.
Dose: A tablespoonful.

156

Potassii bromidi . . ʒij.
Ferri et quininæ cit. . ℈ij.
Tr. chloroform. et morphin. . . . . ♏lxxx.
Aquam ad . . . ʒviij.

157

Tr. cardamomi co. . . ʒiss.
Quininæ sulphatis . . gr. xxiv.
Acid. hydrobromici dil. . ʒiij.
Tr. gelsemii . . . ʒiss.
Syrupi . . . . ʒvj.
Aq. chloroformi ad . . ʒvj.
Dose: A tablespoonful in water.

158

Tr. aconiti . . . ♏vj.
Ammonii chloridi . . ʒij.
Tr. quininæ . . . ʒss.
Tr. gelsemii . . . ʒss.
Syrupi . . . . ʒss.
Aq. chloroformi . . ʒiij.
Aquam ad . . . ʒvj.
Dose: Two tablespoonfuls.

159

Butyl-chloral. hydrat. gr. xxxvj.
Potassii bromidi . . ʒij.
Tr. ferri perchloridi . ʒij.
Syrupi . . . . ʒj.
Aq. chloroformi . . ʒvj.

164

Tr. gelsem., tr. ferri perchlor., et spt. chlorof. aa. ʒij.
Aquam ad . . . ʒviij.
ʒss. pro dosis.

165

Ammonii chloridi . . ʒij. ℈ij.
Tr. quin. amm. et syr. aurantii . . aa. ʒj.
Tr. gelsemii . . . ʒiv.
Aq. chloroformi ad . ʒviij.

166

Phenacetin., phenazon., et pulv. trag. co. . aa. ʒss.
Spt. ammonii comp. . ʒss.
Aq. chloroformi ad . ʒvj.

16

Quininæ sulphat. . . gr. xij.
Ferri sulphat. . . gr. xvj.
Acid. sulphuric. dil. . ʒss.
Liq. opii sed. . . ♏XL.
Syr. aurantii . . . ʒiij.
Tr. gelsemii . . . ♏XL.
Aq. chloroformi ad . ʒviij.
Cap. ʒj. 3tis vel 4tis hor. p.c.

169

Potassii bromidi	ʒj.
Ammonii chloridi	ʒss.
Tr. gelsemii	ʒj.
Tr. cinchon. co.	ʒss.
Syr. aurantii	ʒss.
Aquam ad	ʒvj.

170

Quininæ sulph.	gr. vj.
Acid. citrici	gr. viij.
Ferri et am. cit.	℈ij.
Ammon. chlor.	ʒj.
Tr. colchici	ʒj.
Tr. hyoscyami	ʒij.
Æther. chlor.	ʒj.
Aq. ad	ʒvj.

ʒj. pro dosis.

171

Antipyrini	ʒss.
Potass. bromid.	ʒj.
Tr. gelsem	♏xl.
Tr. opii	ʒss.
Aq. chlorof. ad	ʒvj.

172

Magnesii sulphat.	75·00
Quinin. sulph.	6·00
Ferri sulphat.	10·00
Tr. gelsemii	28·00
Tr. aconiti	6·75
Acid. hydrobrom. dil.	75·00
Aq. chlorof. ad	600·00

173

Potass. bromidi	ʒiss.
Tr. nucis vom.	ʒj.
Ammon. carb.	gr. xxx.
Tr. gelsemii	ʒiss.
Inf. gent. co.	ʒiv.
Aq. chlorof. ad	ʒviij.

M. ft. mist. ʒj. 4tis horis sum.

178A

Glycerini	ʒxl.
Liq. ferri perchlor. fort.	ʒv.
Quinin. sulph.	ʒiss.
Spt. vini rect.	ʒxx.
Liq. ammon. acet. (1-7)	ʒx.
Acid. citric.	ʒj. ʒij.
Ammon. brom.	ʒxx.
Liq. morph. hydrochlor.	ʒvj.
Inf. quassiæ ad	Cong. ij.

177A

Tr. gelsemii	ʒj.
Potass. bromid.	ʒiss.
Tr. bellad.	ʒss.
Quinin. sulph.	ʒiss. gr. vj.
Acid. hydrobrom. dil.	ʒss.
Aq. chlorof. ad	ʒxviv.

M.

167. *Nerve-mixture*

Quininæ sulphat.	gr. xv.
Acid. sulphurici dil.	ʒss.
Ext. sarsæ liq.	ʒj.
Potassii bromid.	ʒss.
Aq. chloroformi ad	ʒviij.

One tablespoonful three times a day.

161. *Influ-Neuralgia Cure*

Quininæ sulph.	gr. xxiv.
Potass. bromid.	ʒj. ℈ij.
Acid. hydrobrom. dil.	ʒj. ℈ij.
Tr. aurant.	ʒj.
Aquam ad	ʒiv.

One dessertspoonful every four hours. Children from five to twelve years, one teaspoonful.

162. *Neuralgia-mixture and Nerve-tonic*

Quininæ sulphatis	gr. xviij.
Ammonii bromidi	ʒij.
Acid. hydrobromici dil.	ʒiv.
Spt. chloroformi	ʒiss.
Inf. gentianæ co. conc.	ʒvj.
Aquam ad	ʒvj.

ʒss. every four hours.

177

Quininæ sulph.	ʒiij.
Acid. hydrobrom. dil.	ʒiiiss.
Ammon. brom.	ʒiss.
Tr. gelsemii	ʒiiiss.
Tr. aurantii	ʒiiiss.
Spt. chloroformi	ʒiss.
Syr. simplicis	ʒvij.
Liq. cocci	q.s.
Aquam ad	ʒlxxxiv.

Dose : One tablespoonful every hour until relieved ; afterwards every three hours.

163. *Neuralia*

Potassii iodidi . .	ʒiij. gr. xij.
Tr. belladonnæ .	ʒxj. ♏xij.
Tr. gelsemii . . .	ʒj.
Spt. chloroformi . .	ʒiss.
Aquam ad . . .	ʒxlviij.

ʒss. ter die.

174. *Neuralgia and Toothache Mixture*

Ammon. chloridi . .	ʒij.
Potassii bromidi . .	ʒiv.
Tr. gelsemii . . .	ʒiv.
Liq. cocci . . .	q.s.
Aq. chlorof. ad . .	ʒxx.

ʒj. 4tis horis sum.

160. *Tic and Neuralgia Mixture*

Sodii salicylat. . .	ʒiij.
Sodii bromidi . . .	ʒiss.
Ammonii chloridi . .	ʒiss.
Tr. gelsem. . . .	ʒij.
Glycerini . . .	ʒj.
Aquam ad . . .	ʒvj.

170A

Chloroformi . . .	ʒiiiss.
Quininæ sulphat. .	ʒiv.
Liq. ferri perchlor. .	ʒiv.
Ammonii chloridi . .	ʒiv.
Tr. gelsemii . . .	ʒiss.
Aquam ad . . .	ʒxcvj.

170B

Tr. gelsemii . . .	♏xL.
Ferri et quinin. cit. .	℈ij.
Ferri et ammon. cit. .	℈iv.
Tr. hyoscyami . .	ʒiij.
Spt. chloroformi . .	ʒij.
Aquam ad . . .	ʒviij.

Capt. ʒj. ter die.

178

Potass. bromid. . .	ʒxij.
Phenazoni . . .	ʒxij.
Liq. cocci . . .	q.s.
Aq. chloroform. ad . .	℥lxxij.

Dose: ʒss. every four hours.

175. *Tonic Neuralgia-mixture*

Quinin. hydrobrom. .	gr. ij.
Acid. hydrobrom. . .	♏x.
Tr. gelsemii . . .	♏x.
Butyl-chlor. hyd. . .	gr. v.
Tr. aurantii . . .	♏xx.
Glycerini . . .	♏xx.
Aq. chlorof. ad . .	ʒss.

ʒss. ex aq. 3tis horis.

176. *Neuralgia-cure and Nerve-tonic*

Quininæ sulphat. . .	gr. xviij.
Acid. hydrochlor. dil. .	ʒij.
Acid. phosphoric. conc. .	♏xx.
Tr. ferri perchlor. . .	ʒij.
Liq. strychninæ . .	♏xx.
Potass. bromidi . .	gr. xL.
Aq. chlorof. ad . .	ʒvj.

ʒss. every hour for four doses, then every four hours.

Phosphorised Nerve-tonic

Syr. hypophosph. co. .	ʒiss.
Aq. chlorof. ad . .	ʒvj.

Pick-me-up

6

Caffeinæ	℈iv.
Syr. Eastoni . . .	ʒx.
Chloroformi . . .	ʒiij.
Syrupi	ʒxviij.
Liq. cocci . . .	ʒij.
Aquam ad . . .	ʒlxxx.

Dose: One to two tablespoonfuls.

7

(Useful after fits of depression, nervous excitement, worry, and for toning-up the system.)

Acid. nit. mur. dil. .	ʒss.
Inf. gent. co. conc. .	ʒiij.
Liq. cocci . . .	q.s.
Aq. chlorof. ad . .	ʒxx.

ʒj. ter die a.c.

Pile-mixture

Magnesii sulphatis	ʒxj.
Ferri sulphatis	℈iv.
Inf. quassiæ conc.	ʒxiij.
Acid. sulphurici dil.	ʒij.
Sacch. ust.	ɱv.
Aquam ad	ʒviij.

One tablespoonful three times a day.

Quinine-and-Iron Mixtures

(syn. *Quinine-and-Iron Tonic*)

78

Ferri et quinin. citratis	ʒj.
Spt. chloroformi	ʒiss.
Aquam ad	ʒvj.

ʒss. ter in die.

79

Ferri sulphatis	gr. xvj.
Quininæ sulphatis	gr. xvj.
Acid. sulphuric. dil.	ʒij.
Syr. limonis	ʒj.
Magnesii sulphatis	ʒiv.
Aquam ad	ʒviij.

80

Ferri et quininæ cit.	ʒj.
Tr. limonis	ʒj.
Acid. hydrobromici dil.	ʒiij.
Glycerini	ʒj.
Aq. chloroformi ad	ʒvj.

81

Ferri et quin. cit.	ʒj.
Tr. aurantii	ʒj.
Glycerini	ʒiv.
Inf. quassiæ conc.	ʒvj.
Aquam chlorof. ad	ʒvj.

82

Ferri et quin. cit.	ʒij.
Tr. quassiæ	ʒiv.
Spt. chloroformi	ʒij.
Glycerini	ʒj.
Aquam ad	ʒviij.

83

Magnesii sulphatis	ʒij.
Ferri ammonio-citratis	℈iv.
Quininæ sulphatis	gr. xvj.
Acidi sulphurici dil.	ɱxvj.
Ætheris chlorici	ʒj.
Syrupi simplicis	ʒss.
Aquam ad	ʒviij.

84

Ferri et quininæ cit.	ʒj.
Tr. nucis vomicæ	ɱxl.
Ætheris chlorici	ʒij.
Aquam dest. ad	ʒviij.

85

Quininæ et ferri cit.	ʒij.
Potassii bromidi	ʒiij.
Spt. chloroformi	ʒiij.
Aquam ad	ʒxc.

ʒss. pro dosis.

87

Ferri et quin. cit.	ʒj.
Aq. flor. aurant. trip.	ʒiss.
Aq. chloroform.	ʒxxv.
Aquam ad	ʒxxxvj.

One tablespoonful in a wineglass of water two or three times a day.

88

Ferri et quin. cit.	ʒ
Acidi citrici	ʒ j.
Vin. aurantii	ʒxx.

86. *Mist. Ferri et Quin. Cit.*
(Aberdeen Infirmary)

Citrate of iron and quinine	ʒj.
Glycerine	ʒss
Water to make	ʒvj.

Dose : ½ to 1 fluid ounce.

Mistura Rachitis

Ol. morrhuæ	ʒij.
Syr. calc. lact. phosph.	ʒj.
Liq. calcis	ʒj.
Sodii hypophosph.	gr. xxx.
Ol. cassiæ	ɱij.
Pulv. acaciæ	ʒij.
Glycerin.	ʒiv.

Dissolve the hypophosphite in the mixed syrup, glycerine, and lime-water. With a portion of this make a mucilage of the acacia and emulsify the oils little by little, thinning with the mixture as required.

The emulsion separates slightly in time, but if more gum be used it is unmanageably thick.

Rheumatic Mixture

18

Sodii salicylat.	ʒiss.
Potassii citrat.	ʒj.
Vin. colchici	ʒiss.
Tr. gentian. co.	ʒss.
Aq. chloroformi ad	ʒviij.

One tablespoonful three times a day.

19

Liq. potassæ	ʒss.
Tr. rhoïs toxicod.	ɱxxxij.
Tr. hyoscyami	ʒiij.
Spt. chloroformi	ʒiss.
Aquam ad	ʒviij.

ʒss. t.d.s.

Roup-mixture for Poultry

Creasote	ɱxvj.
Acetic acid	ɱxvj.
Spirit of juniper	ʒss.
Syrup	ʒj.
Water	ʒxv.

A teaspoonful given during the day to each fowl.

Mistura Sodii Oleatis

Sodium oleate	ʒss.
Pineapple essence	ɱxx.
Tincture of valerian	ʒij.
Water to	ʒviij.

Dose: A tablespoonful two to six times a day.

This preparation is stated by the originator (Dr. W. H. Clemow) to resemble 'Cholelysin.'

Sciatica-mixture

Potassii iodidi	gr. xxiv.
Sodii salicylatis	ʒiss.
Ammon. carbonat.	gr. xxiv.
Tr. cimicifugæ	ʒij.
Tr. gelsemii	ʒj.
Aq. chloroformi	ʒiv.
Inf. gentianæ ad	ʒviij.

An eighth part for a dose.

Sore-throat Mixture.

(For speakers, singers, and all voice workers.)

Acid. hydrochlor. dil	ʒj.
Pulv. potass. chlorat.	ʒj.
Glycerini	ʒiij.
Tr. capsici	ʒss.
Inf. rosæ conc.	ʒij.
Aq. chloroformi	ʒxx.

ʒj. every four hours.

Tonic Mixture

11

Quininæ sulph.	gr. xvj.
Liq. strychninæ	ʒij.
Potass. citrat.	ʒiss.
Tr. ferri perchlor.	ʒv.
Syrupi	ʒj.
Aquam ad	ʒiv.

ʒj. t.d.s.

12

Ferri et quininæ citrat.	ʒiv.
Acid. nitro-hydrochlor. dil.	ʒiv.
Acid. phosphorici dil.	ʒj.
Chloroformi	ɱxlviij.
Tr. calumbæ	ʒij.
Tr. nucis vomicæ	ʒij.
Tr. capsici	ʒiss.
Syr. limonis	ʒiij.
Glycerini	ʒiij.
Aq. destillat. ad	ʒlxiv.

13. *Vigor Tonic*

Acid. nitro-mur. dil.	ʒiss.
Tr. gentianæ co.	ʒiiss.
Liq. strychninæ	ʒiss.
Tr. aurantii	ʒiiss.
Spt. chloroformi	ʒiss.
Aq. dest. ad	ʒxxxvj.

Filter bright.

Dose: One tablespoonful in a wineglassful of water two or three times a day, directly after meals.

Stomach and Liver Mixture

7

Sodii bicarbonat.	℈viij.
Tr. nucis vom.	ʒj.
Tr. rhei co.	ʒiij.
Ess. menth. pip.	ʒj.
Tr. zingiberis	ʒj.
Dec. aloes co. conc.	ɱxlviij.
Aq. chlorof. (B.P.'85) ad	ʒviij.

8

Pulv. rhei	ʒiij.
Sodii bicarb.	ʒvj.
Magnes. carb. pond.	ʒvj.
Ess. menth. pip. (1-8)	ʒvj.
Spt. chloroformi	ʒix.
Spt. ammon. arom.	℥iij.
Inf. gent. co. conc.	℥v.
Aquam ad	℥xlviij.

Compound Phosphorus Tonic

Acid. phosphoric. dil.	℥v.
Acid. nitro-mur. dil.	℥x.
Quininæ sulphatis	ʒss.
Inf. gentianæ co. conc.	℥viij.
Acid. sulphuric. dil.	℥v.

Misce.

MISTURÆ PRO TUSSI

205. *Cough-cure*

Aceti ipecac.	ʒx.
Aceti scillæ	ʒxx.
Syr. pruni virg.	℥iiss.
Chloroformi	♏xl.
Ætheris	ʒj.
Morphinæ mur.	gr. viij.
Liq. cocci	ʒiij.
Glycerini	℥iiss.
Mucil. tragacanth.	℥iiss.
Aquam ad	ʒxx.

Dose: One to two teaspoonfuls.

206. *A 1 Ruby Cough-cure*

Acid. carbolic. liq.	ʒss.
Glycerini	℥iiss.
Æther. methylat.	ʒj.
Chloroformi	♏vij.
Ol. anisi	♏xv.
Tr. capsici	♏xv.
Aceti ipecacuanhæ	℥j.
Liq. cocci	ʒij.
Ext. conii liq.	ʒij.

206A. *Ruby Cough-cure*

Ether	ʒvj.
Acetic acid	ʒiij.
Nitre	ʒij.
Ipecacuanha-wine	ʒvj.
Chloroform spirit	ʒiij.
Oil of aniseed	ʒiij.
Extract of malt	℥j.
Extract of linseed	℥j.
Extract of liquorice	℥j.
Extract of ginger	℥j.
Treacle	℥xij.
Colour	sufficient

Cough-mixtures

207

Liq. chlorof. et morphinæ (Squire)	ʒj.
Vini ipecacuanhæ	ʒij.
Oxymel. scillæ	ʒvj.
Syr. papaveris	ʒiv.
Aquam ad	℥vj.

℥ss. every four hours.

208

Liquor. morphinæ	ʒj.
Vini ipecacuanhæ	ʒiss.
Syr. papaveris	ʒiv.
Spt. chloroformi	ʒj.
Oxymel. scillæ	ʒiv.
Aquam ad	℥ij.

ʒj. ter die et h.s.s.

209

Sem. lini	℥iv.
Marrubii	℥j.
Rad. althææ	ʒj.
Bals. tolutani	ʒij.
Ext. glycyrrhizæ liq.	ʒij.
Syrupi	℥xxx.
Spt. ætheris nitrosi	ʒiv.
Olei anisi	ʒss.
Tr. chlorof. et morphinæ (sine acid. hydrocyan. dil.)	℥vj.
Aceti ipecacuanhæ	℥iv.
Liq. papaveris	℥ij.
Glycerini	℥xxx.

210

Morphin. acetat.	℈ij.
Acid. hydrochlor pur.	ʒj.
Vin. ipecacuanhæ	ʒv.
Bals. peruvian.	ʒiv.
Mucil. acaciæ	ʒviij.
Tr. cannab. ind.	ʒij.
Oxymellis scillæ	ʒxx.
Sol. glycyrrhizæ	ʒXL.
Theriacæ	ʒiv.

One part to be diluted with 3 parts of water.

ʒss. t.d.s.

214

Chloral. hydrat.	gr. v.
Acet. ipecacuanhæ	♏L.
Syr. tolutani	♏lxxx.
Aq. camphoræ	♏lxxx.
Syr. pruni virg.	ʒj.
Aquam ad	ʒviij.

One tablespoonful three times a day.

215

Tr. chlorof. et morphin.	ʒij.
Vin. ipecacuanhæ	ʒij.
Glycerini	ʒij.
Syr. scillæ ad	℥iij.

Dose: A teaspoonful every four hours.

216

Ammonii carbonatis	ʒss.
Ammonii chloridi	℈ij.
Vin. ipecacuanhæ	♏XL.
Spt. chloroformi	ʒj.
Tr. camphoræ co.	ʒiss.
Ext. glycyrrhizæ liq.	ʒij.
Syr. tolutani	℥ss.
Aquam ad	℥viij.

ʒj. pro dosis.

217

Tr. capsici	♏viij.
Liq. cocci	ʒj.
Tr. lobeliæ æther.	ʒij.
Oxym. scill. et syr. anisi aa.	ʒj.

ʒj.–ʒij. omn. quat. hor.

211. *Wild-cherry Linctus*

Liq. antim. tart.	♏xlviij.
Liq. morphinæ	♏XL.
Oxymel. scillæ	ʒiv.
Coloris	q.s.
Syr. pruni virg. ad	ʒj.

266. *Wild-cherry Cough-linctus*

Acetomorphinæ	gr. liv.
Tr. hyoscyami et spt. chlorof. aa.	ʒvj.
Syr. tolut. et vin. ipec. aa.	℥xij.
Syr. pruni virginian.	℥xxxij.
Glycerini	℥xviij.
Persionis	q.s.
Oxymel scillæ ad	Cong. j.

212. *The Poor Man's Comforter*

Theriacæ nig.	ʒj.
Acid. sulph. dil.	ʒij.
Chlorodyni (4 gr. morphine to ʒj.)	ʒiiss.
Aq. ad	ʒviij.

℥ss. t.i.d.

263. *Cough and Bronchitis Mixture*

Ammon. carb.	ʒj.
Chloral. hydrat.	ʒss.
Tr. scillæ	ʒij.
Inf. senegæ conc.	℥ss.
Aq. chloroformi ad	ʒvj.

℥ss. t.d.s.

264. *Cough, Cold, and Lung Cure*

Vin. ipecac.	℥iij.
Spt. chlorof.	ʒij.
Spt. anisi	ʒij.
Spt. caryoph.	ʒiij.
Tr. senegæ	℥iij.
Ext. glycyrrhiz. liq.	ʒiss.
Aq. laurocerasi	℥iij.
Syr. scillæ	lb. viij.

265. '*All Fours*' *Cough-mixture*

Succ. glycyrrh. (block)	ʒj.
Chlorodyni (sine morph).	ʒj.
Ol. menth. pip.	♏xxv.
Ol. anisi	♏xxv.
Ol. gaulther.	♏xxv.
Spt. vini rect.	℥ss.
Theriacæ nigræ	lb. j.
Aquam ad	℥XL.

The foregoing are for adults. The doses have not in all cases been communicated.

Cough-mixtures for Children

213

Potassii nitratis	gr. XL.
Ammonii bromidi	ʒij.
Ext. glycyrrhizæ liq.	ʒj.
Vini ipecacuanhæ	ʒv.
Olei anisi	♏v.
Olei anethi	♏x.
Liq. ammonii acetatis	℥iss.
Tr. tolutanæ	ʒiss.
Theriacæ	℥iv.
Oxymellis scillæ	ʒv.
Aq. chloroformi ad	℥xij.

214

Vini ipecacuanhæ	ʒiss.
Liq. ammon. acetat. conc.	ʒij.
Syr. papaveris	ʒiij.
Syr. scillæ	ʒiij.
Syr. tolutani	ʒiv.
Syr. simplicis	ʒiv.
Aquam ad	℥iij.

ʒj. every four hours.

215

Liq. ammon. acetat. (1–7)	ʒss.
Vini ipecacuanhæ	ʒij.
Spt. chloroformi	♏xx.
Tr. pruni virginian.	♏viij.
Syr. mori	℥ss.
Syr. rhœados	℥ss.
Glycerini	℥ss.
Aquam ad	℥ij.

Dose for one year old and upwards: A small teaspoonful every three hours.

216

Spt. chloroformi	ʒiiss.
Vin. ipecacuanhæ	ʒv.
Syr. papaveris	℥x.
Oxymel. scillæ	℥x.
Syr. simplicis	℥xviiss.
Aquam ad	Oiv.

217

Syrupi scillæ	℥viij.
Syrupi tolutani	℥viij.
Liq. ammonii acetat. fort.	℥j.
Vini ipecacuanhæ	℥xiv.
Spt. ætheris nitrosi	ʒxiv.
Sacchari usti	q.s.
Aquam ad	Oiiss.

218

Vini ipecacuan.	ʒj.
Syr. tolutani	℥iij.
Tr. pruni virgin.	ʒiij.
Glycerini	℥iss.
Spt. ammon. arom.	ʒij.
Tr. chloroformi	ʒiij.
Liq. cocci	ʒj.
Aquam ad	℥xx.

219

Sem. anisi	℥ij.
Sem. lini	℥ij.
Succ. glycyrrhizæ	ʒj.
Ammon. carbonat.	℥iss.
Theriacæ nig.	lb. ij.
Ext. ipecacuan. liq.	♏xcvj.
Aquam ad	℥lxxx.

220. *Chest and Lung Balsam*

Vin. ipecacuanhæ	ʒij.
Tr. benzoin. co.	ʒij.
Liq. ammon. acet.	ʒj.
Syr. scillæ	℥ij.
Glycerini	℥ij.
Mucil. tragacanth.	℥iv.
Aquam ad	℥xij.

Dose: Half to one teaspoonful.

221

Vini ipecacuanhæ	ʒj.
Oxymellis scillæ	℥iiss.
Ext. glycyrrhizæ	℥ij.
Glycerini	℥iv.
Spt. ætheris nitrosi	ʒj.
Olei anisi	gtt. xx.
Aquam ad	Oj.

224

Syr. rhœados	ʒvj.
Syr. tolutani	ʒvj.
Vini ipecacuanhæ	ʒiss.
Tr. hyoscyami	ʒiss.
Aq. anisi conc.	♏xx.
Glycerini	ʒvij
Syr. scillæ	ʒvij.
Aq. chloroformi ad	℥viij.

Dose: One teaspoonful.

225

Potassii carbonat.	ʒij.
Vin. ipecacuanhæ	℥iss.
Spt. ammon. aromat.	ʒiv.
Glycerin.	ʒj. ʒv.
Syrupi	℥ij.
Aquam ad	℥xij.

226

Potassii bromidi	ʒij. ℈ij.
Spt. ætheris nitrosi	ʒv.
Vin. ipecacuanhæ	ʒx.
Syr. tolut. et glycerin.	aa. ʒiiss.
Acet. rubi idæi	ʒiv.
Aquam ad	ʒxx.

227

Acet. scillæ	ʒij.
Vin. ipecac.	ʒj.
Ess. anisi (1 in 10)	ʒj.
Spt. chloroformi	ʒij.
Glycerini	ʒiv.
Aquam ad	ʒxx.

228

Vin. ipecac.	ʒij.
Spt. æther. nit.	ʒj.
Inf. senegæ conc.	ʒij.
Syr. scillæ	ʒiv.
Glycerini	ʒiv.
Aq. cinnamomi ad	ʒiij.

Dose: One teaspoonful.

230

Vin. antim.	ʒiij.
Vin. ipecac.	ʒiij.
Chloroform.	♏vj.
Syrup.	ʒxiiss.
Syr. tolut.	ʒxiiss.
Oxymel. scillæ	ʒxxv.
Tr. pruni virg.	ʒss.
Liq. cocci	q.s.

232

Vin. ipecac.	ʒiiss.
Syr. scillæ	ʒix. ʒvj.
Liq. amm. acet.	ʒiv. ʒvij.
Syr. tolu.	ʒviiss.
Aq. anethi conc.	ʒivss.
Cocci cacti	q.s.
Aquam ad	ʒxxx.

268.

Ol. anisi	♏xx.
Ext glycyrrhiz. liq.	ʒij.
Tr. tolutanæ	ʒiij.
Glycerol. scillæ	ʒiij.
Vin. ipecac.	ʒj.
Aq. chloroformi	ʒiij.
Theriac. nig.	ʒviij.
Aquæ	ʒvj. ʒij.

Dose: Ten drops to a teaspoonful.

222. *Cough and Cold Mixture*

Syrupi tolutani	ʒss.
Ammonii carbonatis	ʒss.
Liq. opii sedativi	♏xxiv.
Liq. ammonii acetatis	ʒj.
Vini ipecacuanhæ	♏xl.
Spt. chloroformi	ʒij.
Aq. camphoræ ad	ʒviij.

An eighth part between meals and at bedtime.

223. *Licorice Cough-mixture*

Tincturæ cubebæ	ʒij.
Tincturæ opii	ʒiss.
Spt. camphoræ (sat. sol.)	ʒss.
Solut. glycyrrhizæ ad	ʒviij.

Dose: A teaspoonful.

The solution of liquorice is made by dissolving 2 oz. of black juice in 10 oz. of water.

229. *Pectoral Mixture for Children*

Potassii nitratis	ʒj.
Vin. ipecac.	ʒij.
Tr. camph. co.	ʒj.
Liq. ammon. acet. conc.	ʒj.
Syr. scillæ	ʒij.
Syr. simplicis	ʒij.
Aceti	ʒj.
Sacch. ust. dil.	ʒj.
Spt. anisi	ʒij.
Aquam ad	ʒxl.

Whooping-cough Mixtures

18

Potassii bromidi	ʒx.
Phenolis liquidi	ʒij.
Aceti ipecacuanhæ	ʒiiss.
Tr. belladonnæ	ʒx.
Tr. lobeliæ	ʒv.
Syrupi tolutani	ʒx.
Oxymellis scillæ	ʒx.
Aquam ad	ʒxl.

Dose: A half to two teaspoonfuls, according to age.

19

Ammonii bromidi . .	ʒj.
Vini ipecacuanhæ . .	ʒj.
Antipyrini . . .	ʒiij.
Oxymel. scillæ . .	ʒij.
Syr. tolutani . . .	ʒiij.
Aq. chloroformi ad . .	ʒxvj.

Dose for children over three years: A small half to a whole teaspoonful.

20

Liq. ammon. acet. conc.	ɱXL.
Vin. ipecacuanhæ . .	ʒv.
Spt. æther. nit. . .	ʒiiss.
Tr. camph. co. (sine opio)	ʒiiss.
Syr. rhœados . . .	ʒj.
Syr. papaveris . .	ʒj.
Aquam ad . . .	ʒviij.

One teaspoonful in water three times a day.

Mistura Validol. Co.

(*Seasickness Mixture, Bardet*)

Picrotoxin . . .	gr. iss.
Solution of morphine (mur.)	ʒiij.
Solution of atropine (sulph.)	ʒss.
Validol	ʒiiss.
Curaçao to . . .	ʒviij.

Dose: One teaspoonful every hour until five doses are taken.

It is advisable before beginning this mixture to take a full dose of sodium bicarbonate (ʒj.) in half a tumblerful of soda-water, or a wineglassful of fluid magnesia.

Wind and Spasms Mixture

Potass. bicarb. . .	ʒiij.
Tr. capsici . . .	ʒss.
Ess. menthæ pip. (1-10) .	ʒiss.
Tr. chlorof. co. (B.P. '85)	ʒij.
Aquam ad . .	ʒvj.

A tablespoonful in as much water every three or four hours.

Antiseptic Mouth-washes

Benzoic

	I	II
Benzoic acid .	gr. v.	gr. xxij.
Thymol . .	gr. j.	gr. iss.
Tincture of eucalyptus . .	ʒj.	ʒij.
Oil of peppermint . .	ɱj.	—
Oil of wintergreen . .	—	ɱxij.
Rectified spirit .	ʒj.	ʒij.
Mercuric chloride (if desired) .	gr. iij.	gr. vj.

One teaspoonful to a tumblerful of warm water.

Carbolic

	I	II
Carbolic acid .	ʒij.	ʒj.
Glycerine . .	ʒiij.	ʒss.
Chloroform .	ʒj.	—
Potash solution .	—	ʒj.
Tincture of cochineal . .	—	q.s.
Water to . .	—	ʒiij.

Twenty drops of No. I, or a teaspoonful of No. II. to a tumbler of water.

Saponic

Quillaia-bark . .	ʒj.
Pellitory-root . .	ʒj.
Orris-root . . .	ʒj.
Cinnamon-bark . .	ʒj.
Benzoic acid . .	ʒj.
Tannic acid . . .	ʒss.
Borax	gr. x.
Cochineal . . .	gr. xxiv.
Sugar	ʒij.
Rectified spirit . .	ʒvj.
Distilled water . .	ʒx.

Prepare s.a.

Salicylic

Salicylic acid . .	gr. x.
Oil of peppermint .	ɱv.
Tincture of lavender .	ɱxx.
Rectified spirit . .	ʒss.
Water to . . .	ʒj.

A teaspoonful to a tumbler of warm water.

Useful for relief of fetid mouth.

Dr. Truman's Antiseptic Mouth-wash

Hydronaphthol	. .	gr. xv.
Rectified spirit	. .	℥j.
Distilled water	. .	℥j.

One teaspoonful in a tumbler of water as an oral deodorant.

Nail-varnish

A solution of celluloid ℥j. in acetate of amyl ℥xv. coloured with rosaniline.

Nauheim Treatment

What is known as the Nauheim treatment was originated by Geheimrath Professor Theodore Schott and his brother, the late Dr. August Schott, in practice at Bad Nauheim, in the Taunus hills. The treatment is for chronic diseases of the heart, and comprises certain body and limb movements in combination with the baths at Nauheim. The water of these baths contains sodium chloride chiefly (3 per cent.), with smaller quantities of calcium chloride and carbonate. The water is peculiar in being highly charged with carbonic-acid gas, and is used as it comes from the bowels of the earth at a temperature of 80° to 90° F. (see *C. & D.*, 1905, I., 160). A general description of the method will be found in the *C. & D.*, 1899, II., 362, and an account of the application of the treatment in England is given in Dr. L. T. Thorne's 'Practical Guide' (Baillière, 3*s.* 6*d.*). The matter is mentioned here on account of the demand for the materials to make the effervescing baths. These, in a dry state, comprising for each bath 8-oz packets of sodium bicarbonate and 5-oz. fused tablets of sodium bisulphate, have been patented by Dr. Ernst Sandow, and are obtainable, with full directions, through ordinary wholesale channels. In hydropathic establishments baths are prepared extemporaneously with the following ingredients:—

No.	Sod. Chlor.	Calc. Chlor.	Sod. Bic.	Ac. Hydrochlor.
1	4 lbs.	6 oz.	None	None
2	5 lbs.	8 oz.	None	None
3	6 lbs.	10 oz.	6 oz.	7 fl. oz.
4	7 lbs.	10 oz.	8 oz.	9¼ fl. oz.
5	9 lbs.	11 oz.	1 lb.	18½ fl. oz.
6	11 lbs.	12 oz.	1½ lb.	27¾ fl. oz.

Each of these quantities is for 40 gals. of water at 95° F. It will be seen that two of the baths are not effervescing, which is intentional, still water sometimes being used at Nauheim. These formulas are useful on occasion, but the tablet system of generating the gas is preferred, as it is gradual and the bath approximates more closely to the natural conditions.

Nebula Hyoscinæ Co.

(*Glasgow Formulary*)

Hyoscin. hydrobrom.	.	gr. vss.
Cocainæ hydrochlorid.	.	gr. xliv.
Atropin. sulphat.	. .	gr. vss.
Glycerin.	. . .	℥iiss.
Liq. thymolis co. ad	.	℥x.

Colour with caramel to the shade of sherry.

Cum Sodii Nitrite, add sod. nit. ʒx.

Nebulol Mentholis Co.

(*Glasgow Formulary*)

Menthol., thymol., camphor., phenol.	aa.	gr. 110½
Paraffin. liq. ad	. .	℥x.

Nebulol Mentholis c. Cocaina

(*Glasgow Formulary*)

Cocainæ	. . .	gr. xxij.
Nebul. menthol. co. ad		℥x.

Nebulol Mentholis c. Iodo

(*Glasgow Formulary*)

Iodi resublim. . .	gr. xxij.
Nebul. menthol. co. ad	ʒx.

Nebulol Thymolis Comp.

(*Glasgow Formulary*)

Camphor. et menthol.	aa. gr. 96
Thymol. . . .	gr. 5¾
Eucalyptol. . . .	♏384
Paraffin. liq. ad . .	ʒx.

Nerve-destroyer

Collodii flexilis . .	ʒij.
Phenol.	ʒij.
Ol. caryophylli . .	ʒss.
Pulv. sang. draconis .	gr. x.

Dissolve the dragon's-blood in ether, add the collodion and ol. caryoph. Stir into the melted phenol.

Directions.—Place a little of the jelly in the cavity of the tooth and plug with cotton-wool.

Nervine

Calcii glycerophos. . .	gr. iij.
Sodii glycerophos. . .	gr. j.
Potassii glycerophos. .	gr. j.
Magnes. glycerophos. .	gr. j.
Ferri glycerophos. . .	gr. ss.
Tr. ignatiæ . . .	♏j.
Pepsin.	gr. iss.
Diastas. . . .	gr. ss.
Tr. kolæ . . .	♏v.
Syr. cerasi . . .	♏xlv.
Acid. formic. . .	gr. ij.
Aquam ad . . .	ʒss.

Misce pro dosis.

Nessler's Reagent (Improved)

Potassium iodide . .	35 grams
Mercuric chloride . .	13 grams
Distilled water . .	500 c.c.

Dissolve and add sufficient sat. sol. of mercuric chloride to give a faint permanent red precipitate. Now add sodium hydroxide 160 grams dissolved in water 200 c.c., shake well, add sat. sol. of mercuric chloride 10 c.c., and make up to 1,000 c.c. with distilled water.

Neuralgia and Headache Cure

Aspirin. et phenacetin. aa.	gr. v.
Caffeinæ	gr. iij.

'Nothing'

In Lancashire Mel Boracis is sold as 'nothing' for thrush.

Oak Stain

Vandyke brown . .	½ oz.
Nigrosin . . .	¼ oz.
Solution of ammonia .	1 oz.
Spirit	1 oz.
Water to . . .	10 oz.

Obesity-cures

External applications may contain either ox-gall or pancreatin in a soap basis with the object of gradually dispelling the superficial layer of fat, especially about the cheeks and neck. Both these ingredients have been found in popular nostrums.

Internal remedies are sometimes valueless—*e.g.*, one powder much advertised is simply sodium bicarbonate. A popular nostrum is a solution of citric acid in water coloured with cochineal, the acid being present to the extent of 38 to 40 gr. per oz. This is the old-fashioned, and frequently effectual, vinegar cure. As has already been stated (p. 853), dieting is necessary for reducing obesity, and most fat people who really desire to reduce their weight can do so if they curb their appetites. Fifteen drops of tincture of belladonna in water twenty minutes before meals is serviceable in repelling the hunger-craving. Medicinal treatment helps, and for that reason extract. fuci vesiculosi in 3-grain doses (in pill or tablet) thrice daily is of value, when reduced dietary is undertaken. The extract is the basis of many popular preparations for obesity. Thyroid preparations should not be taken indiscriminately.

Oleum Cinereum

(syn. *Grey Oil; Inject. Hydrargyri; Mercurial Cream; Mercurial Oil; Lambkin's Cream*)

The treatment of syphilis by intramuscular injections of mercury, calomel, and other salts of mercury in a fatty basis is regarded as valuable, and is practised extensively in the British Army hospitals at home and abroad, as well as in private practice all over the world. In the 'eighties hypodermic injections of mercuric chloride (10 minims daily of 1-per-cent. solution) were used, but caused intense irritation. This was remedied by administering the mercurial in normal saline solution, as in

Auspitz's Mercurial Injection

Hydrargyri perchloridi . .	gr. xv.
Sodii chloridi	℥ss.
Aquæ destillatæ . . .	℥iij.

10 to 20 minims to be injected every second day.

Professor Oscar Liebreich recommended mercuric formamidate, made by dissolving 10 to 13 grams of freshly precipitated mercuric oxide in 10 grams of formamide, and diluting to a litre with water (dose, 1 c.c. or 16 minims). The next step appears to have been the use of calomel 1 in 10 of liquid paraffin or olive oil. In 1886 a liquid mercurial ointment came into use in the Vienna clinic, on the recommendation of Dr. E. Lang. This contained 20 per cent. of mercury, and the basis was a mixture of lard and olive oil: it was called *Oleum Cinereum*. Later ('Arch. der Phar.,' 1889, 125) he recommended the preparation to be made by dissolving 30 parts of lanoline in 100 to 120 parts of chloroform, shaking 60 parts of mercury with this, then triturating until the chloroform is dissipated. This produced *Ol. Cinereum Fortius*, and 6 parts of it with 4 parts of olive oil made *Ol. Cinereum Mite*—the preparation for injection. Numerous modifications of this were within a few years suggested, including benzoating. The more recent formulas are based on Dr. Julius Althaus's method, which he thus describes in his 'Treatment of Syphilis of the Nervous System' (Longmans):—

> The preparation I use consists of 1 part of metallic mercury thoroughly rubbed up with 4 parts of purest lanoline, and then well mixed with 5 parts of carbolised oil of 2-per-cent. strength. This forms a grey cream which is sufficiently fluid for injections, and 10 minims of which contains 1 gr. of metallic mercury.

The formula originally adopted by the Royal Army Medical Department (and to which the name *Lambkin's Cream* has been given in consequence of Lieut.-Colonel Lambkin's papers on the subject, but which is called *Cremor Hydrargyri* by the Department) is—

Hydrargyri	℥ss.
Adipis lanæ anhyd. . .	℥ij.
Paraffin. liq. carbol. (2-per-cent.) ad	℥v. (by vol.)

Finished product equals gr. j. in ♏x.

This proving unsatisfactory in certain climates, Mr. Charles Alexander Hill, B.Sc., F.I.C., experimented (*C. & D.*, 1907, I., 161) for the Department, and his experiments demonstrated that liquid paraffin is an unsuitable constituent for creams which are subjected to the temperatures of 95° to 105° F., the liquid not only separating, but the mercury aggregating so that the original condition of subdivision cannot be attained by shaking. Lanoline is an effective 'killing' agent, and prevents separation; but when a certain proportion is exceeded the cream is too viscous, even when heated, for subcutaneous injection. Mr. Hill succeeded in eliminating liquid paraffin by using a special paraffinum molle, intermediate in its properties between B.P. soft

and liquid paraffins. Its melting-point is 73° F. The following creams were prepared with this :

	1 gr. in 4 m. For 75°.	For 90°
Mercury (parts by weight)	5	5
Lanoline ,, ,, ,,	4	10
Special paraffin (with 2 per cent. phenol) to fl. parts . . .	20	20
	1 gr. in 5 m.	1 gr. in 10 m.
Mercury (parts by weight)	2	1
Lanoline ,, ,, ,,	3	3
Special paraffin (with 2 per cent. phenol) to fl. parts . . .	10	10

The most generally useful strength of cream is 1 gr. in 5 minims. Liquid paraffin can only be used in a cream for cold climates.

The 'French Codex,' 1908, contains the following formula for *Huile Grise* :—

Purified mercury . . .	40 grams
Wool-fat.	26 grams
Vaseline oil	60 grams

The wool-fat and vaseline oil are sterilised separately by heating for twenty minutes at 120° C., then comminuting the mercury with the wool-fat, and finishing *secundum artem*.

Extended experience in our Army hospitals shows that the objection to the lanoline-and-paraffin basis is that the injection frequently lies in the tissues in a hard lump, and Lieut.-Colonel Lambkin, in a communication to the 'Journal of the Royal Army Medical Corps' (July 1907), stated that the following are the formulas for improved mercurial creams prepared by Messrs. Oppenheimer, Son & Co., Limited, for the Department :—

Mercurial Cream

Pure mercury . . .	10 grams
Creo-camph. . . .	20 c.c.
Palmitin basis to . . .	100 c.c.

Ten minims equals metallic mercury 1 gr.

Calomel Cream

Calomel	5 grams
Creo-camph.	20 c.c.
Palmitin basis to . . .	100 c.c.

Ten minims equals calomel $\frac{1}{2}$ gr.
Melting-point, 37° C.

Creo-camph. is composed of equal parts of absolute creosote and camphoric acid. Palmitin basis is a combination of fatty constituents designed by the makers. Independently, but subsequently (*C. & D.*, 1907, II., 411) a French practitioner (Dr. Allaire) recommended palmitin prepared from palm oil as a basis for such injections. It does not become rancid, it easily saponifies in the body, and is readily absorbed. He adds a little guaiacoloid (a combination in molecular proportions of guaiacol and camphor) to the injection.

Aromatic Cod-liver Oil

Coumarin . . .	gr. $\frac{1}{6}$
Vanillin	gr. iss.
Absolute alcohol . .	℥ss.
Oil of lemon . . .	ʒiss.
Oil of peppermint . .	♏xx.
Oil of neroli . . .	♏xx.
Cod-liver oil to . .	℥xl.

Dissolve the aromatics in the alcohol, and add the oil with constant mixing.

Oleum Ricini Aromaticum

(*Hommel's Tasteless Castor Oil*)

Oil of anise . . .	♏iv.
Saccharin . . .	gr. j.
Alcohol (90-per-cent.) .	ʒj.

Dissolve and add—

Castor oil . . .	℥iv.

Oleum pro Scabies

(*Scabiol*)

Bals. peruvian. . .	ʒj.
Styracis liquid. . .	℥iij.
Alcohol. absolut. . .	℥iiss.
Ol. ricini ad . . .	℥xij.

Mix the balsam and storax with the alcohol, then add the oil.

Oxymel Scillæ

Mr. A. C. Abraham has pointed out (*C. & D.*, 1905, II., 984) that the B.P. 1898, by departing from

the old process of boiling the squill, vinegar, and honey together, has considerably altered the character and properties of the oxymel. He recommends the 1885 process as being more in accordance with what is required.

Enamel Paints

These paints are made by mixing varnish and pigments. The varnish is heated and reduced about 25 to 35 per cent. by the evaporation of the spirit, and the colours are added while the varnish is hot. For a white paint either white-lead, zinc-white, or barium sulphate is used, with larger quantities of turpentine and some china clay if a matte surface is required. Driers are also added, borate of manganese being a favourite substance. The following formula is representative :—

Zinc-white	15 lbs.
White-lead	8 lbs.
Varnish	1¾ gal.
Turpentine	1¼ gal.
Resin	3 lbs.
Blue	a trace
Manganese borate or calcined zinc sulphate	4 to 10 oz.

Gold Paint

The basis may be any of the following liquids :—

(*a*) Resin 1 oz., benzine 20 oz.

(*b*) Celluloid ½ oz., amyl acetate 2 oz.

(*c*) Gold size and turpentine or alcohol equal parts.

(*d*) Borax-shellac solution 2½ parts, spirit 1 part.

To one pint of any one of the above 1 oz. of bronze-powder is added. Acidity of the liquid produces a green fluid after contact with the bronze-powder, which is prevented by neutralising with chalk.

Paint-remover

There are two classes of liquid paint-removers at present in use—(1) those that contain a caustic alkali, and (2) those in which a paint-solvent is used. The following is an example of the first variety :—

Caustic soda	2 lbs.
Whiting	3 lbs.
Flour	12 oz.
Water	1 gal.

Dissolve the caustic soda in part of the water, and add to the whiting and flour, previously mixed to a cream with the rest of the water.

One pint of this is mixed with enough water to make 2 gals. of liquid ready for use. The powders in this liquid form a marker, but the whiting is useful in preventing the fluid from drying too quickly. The liquid is painted on, and allowed to remain for a few hours before being scraped off.

The second class of paint-removers requires the use of such solvents as acetone, carbon bisulphide, fusel oil, and turpentine. One variety consists of about 7 parts of fusel oil and 1 part of turpentine. In the case of the more volatile solvents some solid paraffin is introduced to delay evaporation.

Carbon Duplicating-paper

1

Lard	12 lbs.
Japan wax	2½ lbs.
Ivory-black	2 lbs.
Prussian blue	2 lbs.

Melt the lard and wax and grind in the black and blue pigments. While still hot coat paper with the mixture by means of a sash-tool. After standing, wipe off the superfluous colour.

2

Soft paraffin	2¼ lb.
Hard paraffin	6 oz.
Drop black (ground in turpentine)	4 oz.
Plumbago	4 oz.
Soft soap	1 oz.
Oil-soluble aniline black	¼ oz.

Lard oil	16 oz.
Glycerin	16 oz.
Spirit	8 oz.
Plumbago	4 oz.
Oil-soluble violet	1 oz.

Transfer-paper Composition

White wax	8 oz.
White Castile soap	4 oz.
Shellac	4 oz.
Burgundy pitch	8 oz.
Mutton suet	8 oz.
Venice turpentine	8 oz.

Melt together till homogeneous.

Adhesive Paste

Powdered tragacanth	ʒij.
Boiling water	ʒxvj.

Add the water to the tragacanth, stirring vigorously. Separately mix the following :—

Cold water	ʒiv.
Rye flour	ʒvj.
Dextrin	ʒj.

Add this to the tragacanth paste, mix well, and add, with constant stirring, boiling water ʒxxiv. and, later, glycerine ʒj. ; boil for a few minutes, stirring well, add formalin ʒj., and cover.

A mixture of dextrin and 1 to 2 per cent. of caustic soda is sold for addng to flour in making cold-water paste.

Pasta Decorticans

(Shelling paste for *Acne Vulgaris*)

Schwimmer's

Sulphuris præcipit.	ʒss.
Beta-naphthol	ʒss.
Saponis mollis, Ph. G.	ʒj.
Adipis	ʒij.–ʒiij.

Apply to the face at night and allow to remain on for an hour or two, then wash off and apply a dusting-powder. Repeat nightly for a week or two, until desquamation occurs, when a soothing ointment should be used.

Unna's Schälpasta

Zinci oxidi	ʒvj.
Pulv. cretæ gallicæ	ʒj.
Olei benzoinati	ʒiiss.
Adipem benzoinat. ad	ʒij.

This paste, medicated with resorcin ʒiss., is applied twice in one day; next day the resorcin is increased to ʒiij., on the third day to ʒvj., and on the fourth to ʒj. The object of the application is to make the superficial layers of the epidermis peel off.

Encaustic Paste

White beeswax	ʒv.
Gum elemi	gr. XLV.
Benzol	ʒij.
Oil of lavender	ʒiij.

Melt the wax, add the elemi, stir, remove from the heat, and when creamy stir in the liquids.

Rust Polishing-paste

Finely powdered pumice	ʒxxx.
Olein	ʒxx.
Suet	ʒij.
Paraffin	ʒiv.

Melt the fatty matters together and mix intimately with the pumice.

Pastille Guimauve

(*Pâté de Gomme, French Codex*)

White Senegal gum, white sugar, distilled water, of each	100 grams
Orange-flower water	100 grams

The white of 12 eggs.

Wash the gum twice and let it drain. Dissolve it in the water on a water-bath. Pass the solution through a stretched cloth ; add to

it the broken sugar, and let it evaporate on a water-bath to the consistency of thick honey. Beat the white of eggs to a froth with the orange-flower water, and add the mixture in portions to the paste held over a mild fire, and continue to stir briskly until it has reached a consistency that it will no longer adhere to the back of the hand when applied hot with the spatula. Pour it upon a marble slab, or into boxes sprinkled with starch.

Yucapine Pastilles

Menthol and eucalyptus paste with one minin of ol. pumilionis in each pastille.

Antiseptic Throat-pastilles

Menthol. . . .	gr. ¼
Eucalyptol. . . .	♏ss.
Glyco-gelat. q.s. ut fiat pastil.	ʒss.

PERFUMES

The following formulas are new creations or variations supplementary to those in the chapter which begins on p. 176. Similar essences and spirits are to be used.

Bouquet d'Irlande

Essence of white rose .	Oj.
Essence of vanilla . .	ʒij.

May also be made with vanillin essence if a colourless perfume is desired.

Bouquet du Japon

Extrait of rose . .	ʒx.
Essence of neroli . .	ʒx.
Essence of patchouli .	ʒiiss.
Essence of verbena . .	ʒv.
Essence of vetivert . .	ʒv.
Essence of civet . .	ʒj.
Essence of musk . .	ʒj.

Carnation

Extrait of rose . .	ʒx.
Extrait of orange-flower .	ʒv.
Extrait of cassie . .	ʒv.
Essence of vanilla . .	ʒv.
Oil of cloves . . .	♏x.

Eau Japonaise

Cedarwood essence . .	ʒv.
Essence of patchouli .	ʒv.
Essence of sandalwood .	ʒv.
Essence of verbena . .	ʒv.
Essence of vetivert . .	ʒiiss.
Extrait of rose . .	ʒv.

Cedarwood essence: 1 of oil in 40 of S.V.R.

Ess. Bouquet

Otto of rose . . .	ʒj.
Oil of neroli . . .	ʒss.
Oil of pimento . .	♏xx.
Oil of cedar . . .	♏xxx.
Oil of lavender . .	ʒj.
Oil of patchouli . .	♏v.
Oil of bergamot . .	℥ss.
Essence of musk . .	℥iv.
Spirit to	Oiv.

White Heliotrope

Essence of vanilla . .	℥v.
Essence of vanillin . .	℥v.
Extrait of rose . .	℥v.
Oil of bitter almonds .	♏v.

Jockey Club Bouquet

Extrait of jasmine . .	℥iiss.
Essence of musk . .	℥iv.
Otto of rose . . .	♏xx.
Oil of sandalwood . .	ʒj.
Essence of bergamot .	℥ss.
Oil of neroli . . .	♏xx.
Benzoic acid . . .	ʒj.
Tincture of orris . .	℥x.
Spirit to	Oij.

White Lilac

Extrait of tuberose . .	℥xj.
Extrait of orange-flowers .	℥vj.
Essence of civet . .	ʒiv.
Oil of bitter almonds .	♏iij.

White Rose

Extrait of tuberose	ʒij.
Oil of orange	ʒss.
Extrait of jasmine	ʒj.
Otto of rose	ʒj.
Oil of patchouli	♏iij.
Tincture of orris	ʒij.
Benzoic acid	ʒss.
Rectified spirit to	Oij.

Violette de Parme

Extrait of cassie	ʒxv.
Extrait of rose	ʒx.
Extrait of tuberose	ʒx.
Extrait of violet	ʒxix.
Tincture of orris	ʒx.
Oil of bitter almonds	♏iij.

Wood Violet

Oil of almonds	♏xx.
Oil of English lavender	ʒj.
Oil of verbena	♏xxx.
Oil of coriander	♏XL.
Oil of bergamot	ʒiij.
Essence of musk	ʒiv.
Extrait of jasmine	ʒiv.
Tincture of orange	ʒxx.
Benzoic acid	ʒij.
Spirit to	Oiv.

Essence of Ylang-ylang

I

Oil of ylang-ylang	10 grams
Otto of rose	2 drops
Oil of neroli	8 drops
Extrait of jasmine	600 grams
Tincture of tolu	150 grams
Tincture of musk	30 grams
Alcohol (90-per-cent.)	350 grams

Mix, and filter after three days.

II

Oil of orange	ʒj.
Oil of neroli	ʒss.
Essence of Tonquin bean	ʒiij.
Tincture of orris	ʒviij.
Essence of musk	ʒij.
Extrait of tuberose	ʒij.
Extrait of cassie	ʒij.
Spirit to	Oij.

Cheap Perfumes

There is a big outlet in the East and elsewhere for perfumes at low prices—commensurate with the quality. The perfumes are made from synthetics, and are chiefly of German origin. In making these it is desirable, in the first place, to have a clean, absolutely fusel-free spirit; that of 96-per-cent. strength is generally used, and is diluted to 80 per cent. by the addition of distilled water. To destroy any predominating odour of fusel oil or other contaminant of the spirit 3 grams of a 5-per-cent. potassium-permanganate solution is added to 10 litres of alcohol (say, 1 drachm to 3 gals.) and allowed to stand for three to four days, when the alcohol is decanted from the brown precipitate. The following formulas are examples of how the cheap perfumes are made in Germany:—

Heliotrope

Heliotropin	℈ij.
Vanillin	gr. vj.
Coumarin	gr. iv.
Essence of musk	♏XL.
Oil of ylang-ylang	♏xv.
Geraniol	♏viij.
Benzaldehyde	♏ij.

Lilac

Terpineol	ʒss.
Vanillin	gr. x.
Oil of jasmine	ʒss.
Geraniol	♏viij.
Palmarosa oil	♏viij.
Oil of bergamot	♏xv.

May Flowers

Oil of linaloe	ʒij.
Orange-flower oil	♏x.
Oil of jasmine	♏xx.
Essence of raspberry	ʒss.
Essence of musk	ʒj.

Mignonette

Geraniol	3ss.
Orange-flower oil	3ss.
Oil of jasmine	3ss.
Tolu balsam	3ss.
Oil of orange	mx.

Each of these mixtures is added to 40 oz. of 80-per-cent. spirit. The perfume is then poured into amber bottles, which are kept for a few days in winter in a warm place, and then for a few days in a cool cellar. The oftener it is warmed and cooled, the better is the perfume. The addition of 5 drops of ammonia solution to 40 oz. of perfume, to hasten the maturing artificially, is recommended.

Perfumes from Terpene-free Oils

The use of so-called 'terpene-free' oils for the production of cheap perfumes has now become common in Germany. These oils and synthetic scents (*e.g.*, musk and heliotropin) enable compounders to use equal parts of alcohol (95-per cent.) and water. The following quantities in grams of terpene-free oils or synthetics are for 10 litres each of alcohol (90-per-cent.) and distilled water:—

Eau de Cologne

Neroli oil	10
Petitgrain oil	50
Lemon oil	10
Sweet-orange oil	2
Rosemary oil	5
Lavender oil	5
Bergamot oil	50

Heliotrope

Coumarin	8
Vanillin	60
Heliotropin	100
Linaloe oil	10
Clove oil	3
Bergamot oil	10
Musk	5

Hyacinth

Heliotropin	60
Hyacinthin	24
Bergamot oil	30
Cananga oil	5
Terpineol	50
Musk	5

Lily of the Valley

Linaloe oil	100
Bergamot oil	10
Cananga oil	10
Musk	5
Terpineol	100
Vanillin	10

Rose

Reunion geranium oil	35
Patchouli oil	2
Linaloe oil	10
Vanillin	3
Otto of rose	5
Bergamot oil	10
Musk	5

Violet

Bergamot oil	50
Cananga oil	10
Reunion geranium oil	10
Violet (artificial)	20
Infusion of violet-leaves	100

Phenosalyl Substitute
(Vossins')

German phenosalyl is soluble 1 in 25 of water, and 1-per-cent. strength is recommended as an antiseptic lotion or ointment. Mixed with an equal quantity of glycerine, it is used as a caustic, while in doses of one or two minims it is taken internally for flatulence.

Carbolic acid	90 parts
Lactic acid	20 parts
Salicylic acid	10 parts
Eucalyptol	5 parts
Menthol	1 parts

The ingredients are all taken by weight. The three acids are warmed

together till liquid, and then the other components are added.

Photographic Developers

Valenta's Amidol Developer

Sodium sulphite	10 grams
Amidol	5 grams
Caustic-soda solution (1-per-cent.)	100 c.c.
Water	900 c.c.

The chief point about this is the use of caustic soda. (*See* pp. 532–3.)

Daylight Developer

Developers adapted for use in subdued daylight are dyed red, the actinic rays being thus prevented from reaching the plate. Care is taken to keep the plate well covered with developer. Aniline dyes are used as well as phenolphthalein (developers are mostly alkaline). Staining of the film often results, with consequent retardation of printing.

Metol-Quinol Developer

The following new formula has been issued for a one-solution developer (*compare* p. 536) :—

Water	1,000 c.c.
Quinol	5 grams
Metol	3 grams

When dissolved add—

Sodium sulphite	150 grams
Potassium carbonate	1 to 3 grams

For use mix with an equal quantity of water. Temperature of the developer should not be above 65° F., when the time taken is about four minutes.

Pyro-caustic

(H. B. Hughes)

A

Sodium sulphite crystals	5½ oz.
Pyrogallol	385 gr.
Water to make	35 oz.

B

Caustic potash	177 gr.
or caustic soda	123½ gr.
Water to make	35 oz.

For use mix 1 part of A with 1 part of B and 1 part of water.

Caustic alkalies have not hitherto been used in pyro-developer. *See* p. 537.

Pyro-soda

A variation of the formulas on pp. 537–8 consists in putting the potassium metasulphite in the pyro solution with the object of preserving the developer from deterioration by oxidation :—

A

Potassium metasulphite	120 gr.
Potassium bromide	20 gr.
Pyrogallol	80 gr.
Water to	20 oz.

B

Sodium carbonate (pure crystals)	900 gr.
Water to	20 oz.

For use take equal parts of A and B.

Self-developing Plates

Dry-plates which are developed by placing in plain water are prepared by spreading a film of developer on the back of the plate. In Kelly and Bentham's patent the following is the composition of the developer :—

Metol	2 gr.
Quinol	4 gr.
Potassium metasulphite	½ to 1 gr.
Borax	10 to 20 gr.
Colloid	a sufficiency
Glycerine	a sufficiency

Make into a paste, and apply to the back of the plate with a brush.

Stand Development

The method of using weak developer and leaving the negatives immersed for a long time, using an upright dish, is popular with those who have a large number of plates to manipulate. The following are representative formulas—glycin is the favourite :—

Eikonogen and Hydroquinone

A

	Imp.	Met.
Sodium sulphite	50 gr.	100 Gm.
Eikonogen	5 gr.	10 Gm.
Hydroquinone	5 gr.	10 Gm.
Distilled water to	1 oz.	1,000 c.c.

B

Sodium carbonate	75 gr.	75 Gm.
Distilled water to	1 oz.	500 c.c.

For use dilute 3 parts of A and 1 part of B with from 20 to 30 parts of water.

Ortol

Ortol	1 gr.	2 Gm.
Potassium metasulphite	½ gr.	1 Gm.
Sodium sulphite	5 gr.	10 Gm.
Potassium bromide	$\frac{1}{10}$ gr.	0·2 Gm.
Water to	1 oz.	1,000 c.c.

This is ready for use, and takes about ten or twelve hours to complete development.

Rodinal

Rodinal	2½ min.	5 c.c.
Water	1 oz.	1,000 c.c.

This takes about three hours to develop.

Glycin

Sodium sulphite	2½ oz.	25 Gm.
Warm distilled water	4 oz.	40 c.c.

Dissolve and add—

Glycin	1 oz.	10 Gm.
Potassium carbonate	5½ oz.	55 Gm.

This forms a thick cream, which keeps very well in small and well-stoppered bottles. The actual developer is—

Stock solution	6 min.	12 c.c.
Distilled water	1 oz.	1,000 c.c.
Potassium bromide (10-per-cent. solution)	1 min.	2 c.c.

This takes from one to two hours for development.

Glazing-liquid

(For Printing-out Paper)

is formaldehyde solution 1 in 10. The prints are immersed in the liquid for about ten minutes, and then squeegeed on to ferrotype plates or sheets of glass.

Piccalilli

The pickle consists of a mixture of cabbage, cauliflower, onions, cucumbers, and bean-pods. The following makes a typical pickling vinegar :—

Black pepper	4 lbs.
Allspice	4 lbs.
Cloves	1½ lb.
Mace	1 lb.
Horseradish	5 lbs.
Celery-seed	2 lbs.
Ginger	5 lbs.
Mustard	4 lbs.
Turmeric	3 lbs.
Garlic	5 lbs.
Vinegar	50 gals.

The ingredients are soaked in the vinegar for twelve hours and then boiled. The practice of manufacturers varies in regard to the state of division of the spices; as a rule the pepper and allspice are used whole, the other ingredients being finely powdered or pulped. It is also a practice with some makers to add a sweetening ingredient, such as treacle or saccharin. It can be made thicker, if desired, by the addition of flour.

Ringworm-paint

Calomelanos . . . ℈j.
Tr. iodi . . . . ʒss.

Wart-paint

1

Acidi carbolici . . ʒj.
Acidi acetici glacialis . ʒiij.

2

Chloral. hydrat. . . ʒj.
Acid. acetic. glacial. . ʒj.
Acidi salicylici . . ʒiv.
Ætheris methylat. . . ʒiv.
Collod. flexil. meth. . ʒviij.

Pile-application

Morphin. hydrochlor. . gr. v.
Glycer. belladon. . . ʒiij.
Acid. tannic. . . ʒij.
Glycer. tragacanth. . ʒxij.

Pile-powders

Pulv. antimonialis . . gr. xxiv.
Pulv. potass. tart. acid. . ʒij.
Hydrarg. sulph. c. sulph. ʒij.
Sacch. lactis . . . ʒj.

M. et div. in chart. xij.
One in syrup every night.

Anæmia and Blood Pills

Pil. ferri . . . gr. v.

Antibilous Pills (177)

Pulv. ext. coloc. co. . ʒvj.
Pulv. scammon. co. . ʒiiss.
Pulv. zingib. . . . ʒiss.
Pulv. sapo. cast. . . ʒij.
Pil. hydrargyri . . ʒiv.
Ol. carui . . . ʒiv.

M. Ft. massa et divide in pilulas gr. iv. singul.

Mild Aperient and Liver Pills

Pulv. antimonii tartratis . gr. xxiv.
Pulv. opii . . . gr. xxiv.
Pulv. ext. colocynth. co. ʒiij.
Pulv. ipecacuanhæ . . ʒij.
Pulv. cambogiæ . . ʒij.
Pulv. zingiberis . . ʒij.
Pulv. aloes socotrinæ . ʒvj.
Pil. hydrargyri . . ʒvj.
Ol. carui . . . ʒss.

Fiat massa et divide in pilulas gr. iv. singul.

Pilulæ Asiaticæ

The following extract from 'Asiatic Researches,' vol. ii., and 'Annual Register,' 1791, describes the 'Oriental method of curing elephantiasis,' and incidentally states that the following is the original formula for Asiatic pills (*see* p. 739):—

Take of white arsenick, fine and fresh, one tola (105 gr.); of picked black pepper six times as much; let both be well beaten at intervals for four days successively in an iron mortar, and then reduced to an impalpable powder in one of stone with a stone pestle, and thus completely levigated, a little water being mixed with them. Make pills of them as large as tares or small pulse, and keep them dry in a shady place.

One of these pills must be swallowed morning and evening with some betel-leaf, or, in countries where betel is not at hand, with cold water; if the body be cleansed from foulness and obstructions by gentle catharticks and bleeding, before the medicine is administered, the remedy will be speedier.

Army Pill No. 9

(From the Regulations for the Army Medical Service)

Calomel . . . . } of each
Compound colocynth pill } gr. ij.
Compound rhubarb pill . }

Make one pill.

Blood and Complexion Pills

143

Acidi arseniosi . . gr. $\frac{1}{36}$
Ferri redacti . . . gr. j.

Fiat pilula.

144

Acidi arseniosi . . gr. $\frac{1}{20}$
Ferri sulphat. exsic. . gr. ij.

Fiat pilula.

145

Acidi arseniosi . . gr. $\frac{1}{32}$
Ext. nucis vomicæ . . gr. $\frac{1}{3}$
Ext. belladonnæ virid. . gr. $\frac{1}{4}$
Ext. gentianæ . . gr. j.

Fiat pilula.

146

(*Pil. Ferri et Arsenici, Monckton*)

Acidi arseniosi	. .	gr. iv.
Ferri redacti	. .	ʒij. gr. xxiv.
Sacchari albi	. . .	℈v.

Fiat massa et divide in pil. cxliv.

147

Pil. ferri, B.P.	. .	gr. iv.
Acidi arseniosi	. .	gr. $\frac{1}{100}$

148

As No. 147 pill with arsenious acid $\frac{1}{60}$ gr. in each.

149

As No. 147 pill with arsenious acid $\frac{1}{50}$ gr. in each.

150 (Pil. Asiatic.)

Acidi arseniosi	. .	gr. $\frac{1}{15}$
Pulv. piperis nig.	. .	gr. $\frac{3}{4}$
Pulv. gum. acaciæ	. .	q.s.

151

Calcis sulphuratæ in pilulâ: A gr. $\frac{1}{10}$, B gr. $\frac{1}{6}$, C gr. $\frac{1}{8}$, D gr. $\frac{1}{4}$, E gr. $\frac{1}{3}$, F gr. ss., G gr. j., H gr. iss., I gr. ij.

Pil. Cascaræ Sagradæ Co.

(*Sacred-bark Pills*)

Podophyllini	. . .	gr. $\frac{1}{4}$
Cascarini	. . .	gr. $\frac{1}{4}$
Ext. nucis vomicæ	. .	gr. $\frac{1}{20}$
Ext. hyoscyami	. .	gr. $\frac{1}{20}$
Oleo-resin. capsici	. .	gr. $\frac{1}{10}$

Expectorating-cough Pills

Pulv. antimonii tart.	.	ʒj.
Pulv. antimonialis	. .	ʒiij.
Pulv. opii	. . .	ʒij.
Pil. scillæ co.	. . .	℥iv.
Pil. aloes et myrrhæ	.	ʒiij.

Misce et divide in pilulas gr. iij.–gr. v. singul.

Cough and Asthma Pills

Pulv. ipecacuanhæ	. .	ʒiss.
Pulv. ammoniaci	. .	ʒiss.
Ext. scillæ	. . .	ʒj.
Saponis hispan.	. .	ʒss.
Ext. hyoscyami	. .	ʒss.
Ext. conii	. . .	ʒss.
Ol. anisi	. . .	ʒj.

Fiat massa et div. in pil. gr. iij. singul.

Female Obstruction Pills

152

Ferri sulphatis exsic.	.	gr. ss.
Ol. sabinæ	. . .	♏j.
Pil. aloes et myrrhæ	.	gr. iij.

153

Ferri sulphatis	. .	gr. j.
Ext. aloes socotrin.	.	gr. j.
Ext. nucis vomicæ	. .	gr. $\frac{1}{4}$

154

Caulophyllini	. . .	gr. j.
Cimicifugini	. . .	gr. $\frac{3}{4}$
Pulv. aloes barbaden.	.	gr. ss.
Pulv. tanaceti	. . .	gr. $1\frac{1}{4}$
Ext. hellebori	. .	gr. ss.

Pil. Ferri Parvæ

(J. H. Franklin)

Glucosated carbonate of iron	648 gr.
Liquorice-root in powder	162 gr.
Liquid glucose	216 gr.
Water	54 gr.

Make a mass and cut into pills.

$2\frac{1}{2}$ gr. each = B.P. iron pill.
5 gr. each = double do.
$7\frac{1}{2}$ gr. each = triple do.

Gout-pills (64)

Potassii iodidi	. .	ʒiv.
Ext. colchici acet.	. .	ʒiv.
Ext. aconiti	. . .	gr. xvj.
Pulv. glycyrrhiz.	.	ʒj. vel q.s.

M. et div. in pil. sing. gr. iv.

Gout and Rheumatic Pills

65

Ext. colchici . . .	gr. ¾
Pil. rhei co. . . .	gr. ivss.

Ft. pilula.

66

Ext. colocynth. comp. .	gr. xvj.
Pilulæ hydrargyri . .	gr. xvj.
Ext. rhei . . .	gr. xxij.
Ext. colchici . . .	gr. iij.
Ext. hyoscyami . .	gr. iij.

Fiat massa et divide in pilulas xij.

Gravel, Kidney and Backache Pills

Ext. uvæ ursi . . .	gr. ½
Pulv. capsici . . .	gr. ¼
Ol. juniperis . . .	gr. ¼
Pulv. potass. nitrat. .	gr. j.
Terebinth. venet. . .	gr. ⅛

Pil. Hydrargyri Subchloridi Co.

Sir James Sawyer, M.D., finds that if this pill is made with glucose syrup instead of castor oil it is more soluble. The official pill frequently passes through the body unchanged.

Great Northern Hospital Pills

(New Formula)

Pulv. cambogiæ . .	gr. ¼
Pulv. saponis . . .	gr. ss.
Pulv. aloes . . .	gr. iss.
Pulv. jalapæ . . .	gr. iss.
Pulv. colocynth. . .	gr. ss.
Pulv. zingiberis . .	gr. ¼
Ol. caryophyll. . .	♏¼
Theriacæ .	q.s. ut fiat pil.

Head and Stomach Pills

Pil. rhei comp. . .	gr. vj.
Podophylli resinæ . .	gr. ss.
Ext. hyoscyami . .	gr. j.

Misce et divide in pilulas ij.

Indian Elixir Pills

Aloes socot. opt. . .	ʒiij.
Pulv. myrrh. . . .	ʒj.
Pulv. guaiaci . . .	ʒvj.
Pulv. rad. rhei . .	ʒij.
Potass. bitart. . .	ʒij.
Pulv. rad. zingib. . .	ʒij.
Sapo. cast. . . .	ʒvj.
Ol. caryoph. . . .	ʒss.

Divide in pil. gr. iij.

Dose: Two pills at bedtime every other night.

Influenza-pills

Pulv. ipecacuanhæ co. .	ʒiss.
Ext. belladonnæ . .	gr. v.
Codeinæ . . .	gr. v.
Hydrastinæ . . .	gr. xxx.
Ext. aconiti . . .	gr. v.

Fiat massa et divide in pilulas xxx.

Little Liver-pills (410)

Jalapini . . .	gr. xlviij.
Aloini	ʒj.
Euonymini . . .	ʒj.
Podophyllini . . .	℈iv.
Oleo-resin. capsici . .	ʒss.
Ext. nucis vomicæ . .	ʒss.
Ext. belladonnæ alcoh. .	ʒss.

Fiat massa et divide in pilulas cccclxxx.

Liver-pills

66

Pulv. ipecac. . . .	ʒiij.
Pulv. scam. res. . .	℥iij.
Pulv. aloes barb. . .	℥ivss.
Pulv. ext. coloc. co. .	℥iss.
Pulv. sapo. castil. . .	℥iss.
Ext. hyoscy. . . .	℥iss.
Ol. caryophylli . .	ʒvj.
Theriacæ . . .	q.s.

Fiat massa et divide in pilulas gr. iv. singul.

67

Quininæ sulphat. . .	gr. $\frac{1}{60}$
Ext. taraxaci . .	gr. $\frac{1}{30}$
Podophylli resinæ . .	gr. $\frac{1}{8}$
Ext. hyoscyami . .	gr. j.
Ext. col. co. et pil. rhei co. . . . aa.	gr. iss.

May-Apple Pills (68)

Ext. aloes aquos. . .	℈j.
Pulv. cambogiæ . .	gr. iv.
Pulv. jalapæ . . .	gr. viij.
Pulv. colocynthidis .	gr. vj.
Podophyllini . . .	gr. iv.
Saponis hispan. . .	gr. iv.
Oleo-res. zingiberis .	gr. ij.

Fiant pilulæ xij.

Napoleon's Pectoral Pills

(Used by Napoleon I. for asthma)

Pulv. ipecacuanhæ . .	ʒss.
Pulv. scillæ . . .	℈ij.
Pulv. ammoniaci . .	℈ij.
Mucilag. acaciæ . .	q.s.

Fiat massa et divide in pil. xxiv.

Two pills to be taken at night and one in the morning.

Neuralgic Pills (48)

Quininæ sulphatis . .	gr. xij.
Ferri sulphatis exsicc. .	gr. vj.
Ext. belladonnæ alcoh. .	gr. ij.
Ext. gelsemii . . .	gr. ij.
Oleo-resin. capsici . .	gr. iss.
Ext. gentianæ. . .	q.s.

Fiat massa et divide in pilulas xij.

Dr. Pagan's Pills

Compound extract of colocynth . . .	gr. XL.
Extract of jalap . .	gr. XL.
Compound rhubarb pill .	gr. XL.
Powdered scammony .	gr. viij.
Aromatic powder . .	gr. viij.
Extract of hyoscyamus .	gr. xvj.
Castile soap . . .	gr. xvj.

Mass and divide into twenty-four pills.

The pills are rather large.

Dr. Rainy's Pills

Pil. hydrargyri . .	gr. iiss.
Pil. aloes socot. . . .	gr. iiss.

Fiat pilula.

Rheumatic Pills (13)

Pil. colocynth. et hyoscyam. . . .	gr. iv.

One to be taken at bedtime.

Rheumatic Remedy

Lithii salicylatis . .	gr. v.
Phytolaccini . . .	gr. $\frac{1}{8}$
Macrotini . . .	gr. $\frac{1}{4}$
Colchicinæ . . .	gr. $\frac{1}{250}$

Fiat pil. vel tab.

Rheumatic and Gout Pills

Ext. colocynth. co. . .	ʒxij.
Pil. hydrargyri . .	ʒviij.
Ext. colchici acet. . .	ʒiv.
Pulv. ipecacuanhæ . .	ʒiv.
Syrupi . .	q.s. ut fiat massa

Div. in pil. gr. iv. singul.

Pilula Sodii Oleatis

I

The contents of caps. sodii oleatis are said to be the same as 'Probilin.'

II

Mass 25 grams (say, ʒviss.) of acid sodium oleate with glycerine and kieselguhr, and divide into 100 pills.

Stomach and Liver Pills (18)

(syn. *Bilious and Liver Pills*)

Resin. podophylli . .	gr. $\frac{1}{4}$
Ext. colocynthidis . .	gr. ss.
Pulv. aloes socot. . .	gr. j.
Pulv. scammonii . .	gr. $\frac{1}{4}$
Pulv. saponis . . .	gr. $\frac{1}{8}$
Ext. hyoscyami . .	gr. $\frac{1}{8}$
Oleo-res. zingiberis . .	gr. $\frac{1}{8}$

Ft. pil.

Tic-pills

Quininæ sulphatis .	gr. xxiv.
Ext. belladonnæ .	gr. vj.
Morphinæ hydrochloridi .	gr. iij.
Pulv. capsici .	gr. xxiv.

Fiat massa et divide in pilulas xxiv.

Tic, Toothache, and Neuralgia Pills

Quininæ sulphat. .	gr. xxxij.
Zinci sulphat. .	gr. viij.
Ext. conii .	gr. x.

Misce et fiant pilulæ xx.

Tonic-pills (30)

(syn. *Neuralgia, Tic, and Toothache Pills*)

Cinchonidinæ sulphat. .	℈v.
Resin. podophylli .	gr. v.
Strychninæ sulphat.	gr. iij.
Gelsemini .	gr. v.
Ferri sulphat. exsicc.	℈iiss.
Oleo-res. capsici .	gtt. x.

Fiat massa et divide in pil. 100.

One or two for a dose.

Unna's Keratinised Pills

According to Runge the fatty excipient employed is—

Yellow wax .	15 grams
Fresh beef suet .	85 grams

Melt and add a solution of

Coumarin .	0·1 gram
Alcohol (90-per-cent.)	5 grams

Mix together, and evaporate the alcohol by means of a water-bath.

Various powders are used as a secondary excipient—namely, white bole, kaolin, powdered charcoal, and rice flour, with the addition of a little soap. The pills when prepared are coated five or six times with a solution of keratin (1 in 30 of ammonia). To prevent the pills from sticking to each other, they are rolled when nearly dry in graphite powder. This is an indispensable precaution, as otherwise the coating of keratin is damaged and the medicine has not the desired effect. The following are examples of the formulas prescribed by Unna :—

Arsenious-acid Pills

Arsenious acid .	0·5 gram
Powdered vegetable charcoal .	3 grams
Powdered medicinal soap .	0·5 gram
Fatty excipient .	6 grams

Triturate the acid with the powdered charcoal, then add the powdered soap with the fatty excipient, and mass, dividing into 100 pills, each of which will contain 0·005 gram of arsenious acid (about $\frac{1}{14}$ gr.).

Ferrous-chloride Pills

Dried ferrous chloride	3 grams
Kaolin .	5·5 grams
Rice starch .	5 grams
Powdered medicinal soap .	1·5 gram
Fatty excipient .	10 grams

Triturate the ferrous chloride with the kaolin. Separately mix the powdered soap and rice. Mass these with the fatty excipient, and divide into 100 pills. Each contains $FeCl_2$ 0·03 gram (about $\frac{1}{2}$ gr.).

Little Wind-pills (12)

Pulv. rhei .	gr. ss.
Pulv. aloes .	gr. ss.
Pulv. saponis .	gr. $\frac{1}{4}$
Pulv. capsici .	gr. $\frac{1}{4}$
Ext. gentianæ .	gr. ss.
Ext. nucis vomic. .	gr. $\frac{1}{8}$
Quininæ sulphat. .	gr. ss.

Fiat pilula.

Wind and Stomach Pills

Pulv. anthemidis	℥iv.
Pulv. zingiberis	℥iv.
Pulv. saponis	℥iv.
Pulv. rhei	℥iv.
Pulv. aloes barb.	℥xvj.
Olei carui	℥j.

Syrupi q.s. ut fiat massa et divide in pil. sing. gr. iv.

Wind-and-Water Pills (2)

Ext. anthemidis	gr. j.
Pulv. rhei	gr. j.
Pulv. aloes barb.	gr. ss.
Pulv. asafetidæ	gr. ss.
Ol. carui	gtt. ¼

Enteric Pill-coatings

Benzo-naphthol	0·6 gram
Tannigene	1 gram
Salol	2 grams
Alcohol (90-per-cent.)	3 grams
Ether	10 grams

The pills are merely shaken with the liquid and allowed to dry. The coating only dissolves in alkaline liquids, and the pills pass unchanged through the stomach to the bowels.

II

Maizine	35 grams
Alcohol	25 grams
Acetic acid	40 grams

Dissolve, and coat the pills with the varnish. The pills are then insoluble till they reach the intestines.

Maizine is an albuminoid substance obtained from maize.

Pix Burgundica Factitia

Colophony	14 lbs.
Linseed oil	1 lb.
Palm oil	1 lb.

Melt together, strain, and when the mixture is soft and cool enough to handle, pull it with the hands in the same manner that shoemakers' rosin is pulled.

Dandruff Pomade

7

Sulphur. præcip.	gr. xv.
Acid. salicylici	gr. xv.
Paraffin. mollis	℥j.

8

Menthol	5·5 parts
Borax	2·5 ,,
Precipitated sulphur	70 ,,
Cremogen	75 ,,
Water	397 ,,

Place the cremogen in a pan over a hot water-bath; when melted add the menthol. Dissolve the borax in the water and incorporate slowly with the melted cremogen, stirring until a homogeneous cream results, then introduce the sulphur which has been rubbed down in a mortar.

Excellent for itch and dandruff.

Cider-preservative

Sodium salicylate in the proportion of half a teaspoonful to each gallon is sold as a cider-preservative or antiferment. Saccharin or sugar candy is often mixed with the salicylate. Mr. Lloyd, a well-known authority on cider, states that 'in the case of properly filtered juice the use of preservatives is apparently unnecessary and detrimental to the cider.' Pasteurisation is the best preventive of fermentation in cider. The temperature of the cider is gradually raised to 170° F., kept at this point for ten minutes, and the fluid then quickly bottled into sterilised vessels—*i.e.*, bottles are placed in boiling water and only taken out just before filling.

Black-hat Polish

Orange shellac	3 lbs.
Powdered resin	1 lb.
Benzoin	3 oz.
Spirit	1 gal.

Dissolve, strain, and add—

Black spirit-stain	1 oz.

Asthma-powder
(Sir James Sawyer)
(*Pulv. Stramonii Co., B.P.C.*)

Stramonium	50 parts
Lobelia	6
Anise	12
Tea	6
Oil of eucalyptus	1
Potassium nitrate	25

All in powder; mix.

Balmanno's Powder

A title suggested by the late Mr. Balmanno Squire, M.B., for a modified compound liquorice-powder better suited than the official preparation for persons affected with diabetes, obesity, gout, and allied ailments (*C. & D.*, 1908, I., 501). Liquorice and sugar are objectionable in such cases, and Mr. Squire replaced the 2 parts of liquorice and the 6 parts of sugar in the B.P. formula (making 8 in all) by 8 parts of a powder composed of sweet almonds and gum acacia, in the proportion of 8 parts of almonds to 1 of gum. The almonds, having first been blanched and dried, are rubbed in a mortar to a smooth consistence. The powdered gum and the senna, fennel, and sulphur are then added, and the whole makes a very elegant powder. In place of the almonds with their natural oil Mr. Squire subsequently recommended (*C. & D.*, 1908, I., 611) almond-meal deprived of its oil. Almonds contain no starch, and biscuits made of them are consequently recommended as an article of food for the diabetic and the gouty.

Cooling-powders (10)

Hydrarg. subchloridi	ʒj.
Sacchari lactis	ʒiv.
Carmini	gr. ij.

A quarter of a grain for each three months of the child's age.

Diarrhœa-powder

Pulv. cretæ aromat.	gr. viij.
Pulv. catechu	gr. ij.

Misce pro dosis.

Pulvis Digestivus
(*Glasgow Formulary*)

Pepsin	gr. 26
Aromatic powder	gr. 87½
Heavy magnesium carbonate	gr. 105
Sodium bicarbonate	ʒss.

Mix thoroughly and sift.

Dose: Half to one teaspoonful.

Antiseptic Foot-powder

Olei eucalypti	ʒij.
Acidi salicylici	ʒj.
Pulv. zinci oleatis	ʒj.
Pulv. acidi borici	ʒx.
Pulv. cretæ gallicæ	ʒxij.

Gapes-powder

Mix half a bushel of slaked lime with 10 lbs. of sulphur and 1 oz. of carbolic acid. Distribute the powder in the air of the fowlhouse.

Pulvis pro Gargarisma
(*Gargasal, G.F. and B.P.C.*)

Pulv. potass. chlorat.	ʒj.
Sodii biborat.	ʒj.
Sodii chloridi	ʒij.
Sodii bicarbonatis	ʒiv.

A teaspoonful in a small tumblerful of warm water for a gargle.

Headache-powders (29)

Caffeinæ	ʒj.
Antifebrini	ʒiv.
Pulv. curcumæ	ʒiv.

Dose: 10 gr.

Headache and Neuralgia Powders
22

Phenacetini	gr. v.
Caffeinæ	gr. j.
Pulv. sacchari lactis	gr. j.

Misce pro dosis.

23

Phenacetini . . .	ʒij.
Caffeinæ . . .	ʒss.
Carmini	gr. j.

Divide into 10-grain powders. One to be taken in a little warm water when the pain is severe.

Neuralgia-powder (24)

Quininæ sulph. . .	gr. iij.
Caffein. cit. . . .	gr. vj.
Phenacetin. . . .	gr. j.
Antifebrin. . . .	gr. j.

Dose: 6 grains.

Headache, Toothache, and Neuralgia Powders

Acetanilidi . . .	gr. iv.
Caffeinæ. . . .	gr. j.
Sodii bicarbonatis . .	gr. iv.
Saccharini et carmini aa.	q.s.

Pro dosis.

Influenza-powders

3

Phenazoni . . .	gr. v.
Quininæ sulphatis . .	gr. ij.

Fiat pulvis.

4

Pulv. potass. nit. . .	gr. ix.
Potass. bicarb. . .	gr. ix.
Sodii salicylatis . .	gr. ix.
Pulv. ipecac.	gr. j.

M. ft. pulv. pro dosis.

Astringent Nasal Powder

Pulv. acid. borici . .	ʒss.
Pulv. tragacanth. co. .	ʒij.
Mentholis . . .	gr. v.
Acidi carbolici . .	gr. v.
Liq. formaldehyd. (40 per cent.)	♏x.

Rub the menthol and carbolic acid in a mortar, and gradually triturate with them the boric acid. Then add the compound tragacanth powder, and finally the solution of formaldehyde, mixing well. It should be noted that menthol is apt to produce eczema when too much is applied, and the effect of preparations of this class should be carefully watched, their composition being modified if necessary. If the powder irritates this may be due to the formaldehyde, the proportion of which may be reduced to meet special requirements.

Newmarket Powder for Horses

Pulv. potass. nit. . .	ʒxvj.
Sulphur. flor. . . .	ʒviij.
Pulv. potass. bitart. .	ʒvj.
Pulv. zingiberis . .	ʒiv.

Dose: ʒiv. to ʒvj. One powder at night in mash, or (from bulk) a tablespoonful in mash at night.

Pulv. Salicylici Co.

(*Sydney Hospital*)

Salicylic acid . . .	ʒxij.
Sodium bicarbonate,	
Sodium salicylate,	
Sodium chloride, of each .	ʒlxxij.

Label: 'One tablespoonful of the powder to be used in 1 pint of warm water to syringe through the nose once a day.'

Teething-powders (28)

Pulv. ipecac. co. . .	ʒj.
Hydrarg. subchlor. . .	ʒij.
Sacchar. lactis . .	ʒiv.

Dose: 3 grains.

Whooping-cough Powders

Pulv. antimonialis . .	℈iv.
Pulv. aluminis . .	℈v.
Pulv. ipecac. . . .	gr. x.
Pulv. glycyrrh. decort.	ʒiij. gr. x.

M. ft. pulv.

Dose: Age 1 to 4 years, 3 grs.
,, 5 ,, 10 ,, 6 ,,
Above 10 ,, 12 ,,

Three times a day in a little warm water.

Worm-powders

37

Hydrarg. subchloridi .	ʒj.
Santonini . . .	ʒij.
Pulv. scammonii co. .	ʒv.

38

Jalapin. et hydrarg. subchlor. . .	aa. ʒj.
Santonin. et p. sacch. lac.	aa. ʒij.

39

Santonin., hyd. subchlor., et sacch. lac. .	aa. ʒij.

Pulv. Zinci et Amyli Co.

(*Glasgow Formulary*)

Zinci oxidi . . .	ʒv.
Pulv. amyli . . .	ʒv.
Pulv. acid. borici . .	ʒv.
Pulv. cretæ gallicæ . .	ʒv.
Ol. rosæ geranii . .	♏xx.

All the ingredients should be in superfine powder, and the mixture sifted through a No. 60 sieve.

Rabbit Bait

Perfume malt with oil of anise and strew near the nets.

Rabbit-scaring Liquids

A mixture of essential oil of camphor and turpentine with paraffin oil. A mixture containing trimethylamine and tar appears also to exert a repelling influence.

Sapo Aromaticus, Ph.Neder.

Balsamic Opodeldoc

Soft soap . . .	20 grams
Camphor . . .	2 grams
Dilute spirit . .	74 grams

Dissolve and add—

Oil of rosemary .	1 gram
Solution of ammonia .	3 grams

Filter.

Soft Soap is made with sesame oil (65), potash solution s.g. 1·344 (35), and water 100.

Sapo Superadipatus, Ph.Neder.

Superfatted Soap

Wool-fat . . .	4 grams
Soft soap . .	20 grams
Medicinal soap (sapo durus) . . .	76 grams

Sapo Superadip. c. Pice Liquida, Ph.Neder.

Wool-fat . . .	4 grams
Tar . . .	5 grams
Soft soap . . .	15 grams
Medicinal soap . .	76 grams

Sapo Superadip. cum Sulfure Præcipitato, Ph.Neder.

Wool-fat . . .	4 grams
Precipitated sulphur .	10 grams
Soft soap . . .	20 grams
Medicinal soap . .	66 grams

Chilblain-soap

Euresolis (Knoll) . .	ʒiij.
Eucalyptolis . . .	ʒiij.
Olei terebinthinæ . .	ʒiij.
Lanolini	ʒiij.
Saponis mollis . .	ʒxx.

Directions for Use: Rub the chilblains several times a day with the chilblain-soap.

Not suitable for broken chilblains.

Ether Soap

Martindale's formula

Soft soap . . .	ʒiv.
Alcohol (90-per-cent.) .	ʒiiss.

Mix, and after twenty-four hours decant from the sediment, then add

Methylated ether (0·720). ʒviss.

E. White's formula (Sol. Saponis Ætherea)

Oleic acid . .	36 c.c.
Caustic-potash solution (1 in 1) .	7 c.c. or a sufficiency
Alcohol (90-per-cent.)	16 c.c.
Methylated ether (0·720) . .	a sufficiency to make 100 c.c.

Mix the oleic acid with the alcohol in a flask, and drop in the potash solution until neutral to phenolphthalein; then add 1 c.c. of potash solution, set aside to cool, and finally add the ether.

Floating Soap

Hard soap . . .	14 lbs.
Water	3 pints

Melt by the aid of heat and assiduously beat together until the whole has at least doubled its volume. Colour, perfume, and pour into frames not more than six inches deep.

Antiseptic Floor-Soap

Household carbolic soap (red)	1 lb.
Potassium carbonate .	2 oz.
Water	20 oz.
Crude cresol . . .	2 oz.
Citronella oil . . .	2 dr.
Spirit . . .	a sufficiency

Cut up the soap into small pieces and heat with the water in which the potassium carbonate has been dissolved. Then add the perfume and cresol, and lastly sufficient spirit to make the proper consistence.

Hard Soap

(Home-made)

Take 10 lbs. 98-per-cent. caustic soda (in powder) and put into a jar with 4½ gals. of water, stir once or twice, and let it get cold. Weigh out 75 lbs. of clean grease, tallow, or oil (if a solid fat melt it at a temperature not exceeding 100° F.). Pour the soda solution (lye) slowly into the melted fat or oil in a small stream, stirring with a flat wooden stirrer, and continue stirring gently until the solution and fat are combined and of a honey-like appearance. (The time taken for combination varies from fifteen to twenty minutes; but be careful not to stir too long.) When the mixing is completed pour the liquid soap into a mould, which may be any square box, previously wetting the sides to prevent the soap sticking. Wrap up in old blankets or put in a warm place until next day, when the box will contain a block of 130 lbs. of soap which can afterwards be cut up into bars with a wire.

Sapo Jalapinus, Ph. G.

Jalap resin .	4 parts by weight
Medicinal soap	4 ,, ,,
Dilute spirit (0·892) .	8 ,, ,,

Dissolve with agitation by the heat of a water-bath, and evaporate to 9 parts by weight.

Liquid Soap

I (Stanislaus)

Linseed oil 300 grams (℥ix. ʒv.

Place in a large and strong bottle, and add the following solution :—

Potassium hydroxide	61 grams (ʒxv. gr. xxvj.)
Alcohol .	100 grams (℥iij. ʒiss.)
Distilled water	150 grams (℥iv. ʒviss.)

Shake occasionally during twenty-four hours or until completely saponified, and add—

Alcohol .	200 grams (℥vj. ʒiij.)
Distilled water	200 grams (℥vj. ʒiij.)
Oil of bergamot,	
Oil of orange,	
Oil of cassia,	
Oil of spearmint, of each	2 grams (ʒss.)

Solids and liquids by weight.

II (Stanislaus)

Potassium carbonate .	ʒij.
Diluted alcohol . .	℥xij.

Dissolve and add—

Soft soap . . .	℥vj.

Digest in a warm place overnight, then add—

Diluted alcohol to make .	℥xxxij.

After standing twenty-four hours filter, and add—

Soluble blue . .	gr. ij.
Oil of cassia,	
Oil of lavender, of each .	ʒss.

III (Wilbert)

Sodium hydrate	40 grams (℥x.)
Potassium hydrate	40 grams (℥x.)
Cottonseed oil	500 c.c. (℥xviiss.)
Alcohol . .	250 c.c. (℥viij. ℥vj.)
Distilled water to	2,500 c.c. (℥lxxxviij.)

In a suitable container, preferably a glass-stoppered bottle, dissolve the potassium hydrate and the sodium hydrate in 250 c.c. (℥viij. ℥vj.) of distilled water, add the alcohol, and then add the cottonseed oil in three or four portions, shaking vigorously after each addition. Continue to agitate the mixture occasionally, until saponification has been completed. Then add the remaining portion of distilled water, and mix.

The foregoing are alternative formulas for spt. saponis (*q.v.*).

IV (*Sanitary*)

Soft soap . . .	4 lbs.
Water	4 lbs.
Soluble creosote . .	1 lb.
Soluble olein . . .	1 lb.

Heat the first three ingredients together, add the olein, and allow to cool.

V (Richards' formula for Surgeons)

White soap . .	100 parts
Soft soap . .	100 parts
Poppy oil . .	50 parts
Water . . .	300 parts

The white soap is scraped, mixed with the other ingredients, and the whole heated to a paste, to which is added—

Glycerine . . .	5 parts
Beta-naphthol . .	5 parts
Alcohol (90-per-cent.) .	50 parts
Oil of lemon . . .	5 parts
Water sufficient to make	1,500 parts

Surgeon's Pumice Soap

(J. K. Thum's formula)

Cottonseed oil .	500 c.c.
Stearic acid . .	500 grams
Sodium hydroxide .	150 grams
Alcohol . . .	150 c.c.
Sodium chloride (20-per-cent. solution)	a sufficiency
Distilled water .	a sufficiency
Powdered pumice .	300 grams

Heat the cottonseed oil and stearic acid until the acid is completely dissolved. Then add the sodium hydroxide, dissolved in a litre of distilled water, and heat for fifteen minutes with constant stirring. Next add the alcohol and stir until saponification is effected, which will be apparent in a few minutes by the homogeneous appearance of the mixture. Then add one litre of 20-per-cent. solution of sodium chloride and stir vigorously. Allow to stand until the soap is hardened; the alkaline liquid which remains at the bottom of the container is then drained out by punching a hole in the soapy mass on one side. The soap is next washed two or three times with distilled water, melted, and while still on the fire the powdered pumice is added and the whole thoroughly incorporated. The hot soap is then poured into suitable moulds, and allowed to remain for twenty-four hours to set.

Soap-bubble Solution

Professor C. V. Boyes, in his book on 'Soap-bubbles,' gives the following method of making this solution:—'Fill a 40-oz. clean stoppered bottle three-parts full of distilled water, add 1 oz. of pure oleate of soda. Leave it for a day or two until it dissolves. Nearly fill up the bottle with Price's glycerine and shake well. Leave the bottle, stoppered, of course, for about a week in a dark place.

Then with a syphon draw off the clear liquid from the scum. Add one or two drops of liq. ammon. fortiss. to each pint of the liquid. Do not filter, and never return the liquid which has been used to the stock bottle.'

Soft Soap
(*Home-made*)

Dissolve 20 lbs. of caustic potash in 3½ gals. of water; when cold pour the solution, in a thin stream and slowly, into 8¾ gals. of cotton-seed oil, stirring with a wooden stirrer 3 in. broad. Stir gently until the potash and oil have combined and the mixture has the appearance of honey Cover and set aside in a warm place until next day, then stir gently but well, and set aside for several days.

The product is for domestic use; it is too stiff for sale, but if that is desired mix with it a third of its weight of water, aiding the process by heat, but the mixture should not be boiled. Instead of cottonseed oil 75 lbs. of tallow or grease (*e.g.*, kitchen waste) may be used.

Clarke's Standard Soap Solution

Take a cake of white olive-oil soap and scrape off 4 or 5 grams of shavings, which dissolve in 500 c.c of a mixture of two volumes of methylated spirit (non-mineralised) and one volume of distilled water. Filter off the insoluble matter, and dilute the soap solution with half its volume of water.

A portion of this solution is carefully diluted until 7 or 8 c.c. is required to form a permanent lather with a mixture of 25 c.c. of standard calcium-chloride solution (prepared by dissolving 0·2 gram of Iceland spar in dilute hydrochloric acid, and, after driving off excess of acid on the water-bath, making up to 1,000 c.c. with distilled water) and 25 c.c. of distilled water.

Sutton's Method

Lead plaster . .	. 150 parts
Potassium carbonate	. 40 parts

Rub together and add methylated spirit (non-mineralised), continuing to triturate until a creamy mixture results. After some hours throw on to a filter and wash with methylated spirit several times. Dilute this solution with a mixture of spirit (1) and water (2)—regarding the soap solution as spirit—until 14·25 c.c. is required to form a permanent lather with 50 c.c. of standard calcium-chloride solution.

Wanklyn's Soap Solution is practically the same as Clarke's, viz.: Dissolve 10 grams of Castile soap in sufficient 35-per-cent. alcohol to provide a solution which will froth when verified against a solution of 1·11 gram of pure calcium chloride dissolved in 1 litre of water; that is to say, 12 c.c. of the calcium-chloride solution made up to 70 with distilled water should, when shaken with 13 c.c. of the standard soap solution, give a lather that persists for five minutes.

Soap for Cleaning Rubber Collars

Soap in powder . . .	1 lb.
Strong solution of ammonia	1 oz.
Benzine . . .	a sufficiency

Mix the ammonia solution with the soap, and add sufficient benzine to make a paste.

Dry Shampoo

Strong solution of ammonia	ʒss.
Oil of bitter almonds .	♏xv.
Tincture of quillaia .	ʒiij.
Lavender-water . .	ʒv.
Rectified spirit to . .	ʒxij.

The shampoo must be made with spirit, and without water. Any perfume may replace the lavender.

Shampoo-powder

Dried sodium carbonate .	ʒiss.
Dried curd soap . .	ʒiss.
Solution of orange[1] .	a sufficiency

Make into a powder, which is used with a pint of water as a shampoo, for regular washing of the head.

Shampoo-powder for Dry Use

American Style

Powdered orris . .	ʒvj.
Fullers' earth . . .	ʒvij.
Arrowroot starch . .	ʒss.
Oil of lavender . .	ʒj.
Alcohol	ʒj.

The oil of lavender is dissolved in the spirit and sprayed on to the mixed powders.

English Style

Cornflour . . .	ʒviij.
Powdered borax . .	ʒj.
Powdered carbonate of soda	ʒj.
Perfume	to please

Mix together and sift.

The powder is employed by sprinkling on the hair at bedtime, and in the morning the hair is vigorously brushed to remove the powder.

Sand Soap

A mixture of 3 parts of finely sifted dry sand with 2 parts of soap (warm from the making) well crutched together.

Soap Perfumes

Synthetic perfumes are now largely used (with or without natural essential oils) in soap manufacture, and particulars of most of them are given in the chapter on perfumes, p. 232. Most manufacturers supply pamphlets which contain information as to quantities and combinations.

General

I

Oils of lavender, thyme, and coriander, equal parts.

II

Oil of bergamot . .	ʒiss.
Oil of rose-geranium .	ʒiij.
Oil of neroli . . .	ʒiiss.
Oil of lemon . . .	ʒiij.

III

Coumarin solution (10-per-cent.)	ʒij.
Artificial musk solution (1-per-cent.) . .	ʒss.
Oil of bergamot . .	ʒiij.
Oil of neroli . . .	ʒiss.
Oil of petitgrain . .	ʒj.
Oil of sandalwood . .	ʒss.
Oils of cedar, lavender, and rose-geranium, of each .	ʒiij.
Oil of citronella . .	ʒss.

For Honey Soap

Oil of lemon . .	ʒv.
Oil of peppermint . .	ʒj.
Oil of rosemary . .	ʒj,

Orange

A

Oil of orange-peel . .	ʒviij.
Oil of thyme . . .	ʒij.
Oil of cinnamon . .	ʒss.

B

Oil of linaloe . . .	ʒiv.
Oil of sweet orange .	ʒj.
Artificial neroli . .	ʒiiiss.
Coumarin . . .	ʒj.
Vanillin	ʒj.
Hyacinthin . . .	ʒj.
Artificial musk . .	ʒij.

Violet

Oil of rose-geranium .	ʒx.
Oil of cassia . . .	ʒv.
Oil of cloves . . .	ʒv.
Oil of lavender . .	ʒv.
Oil of sassafras . .	ʒv.
Oil of orris . .	ʒj.
Tincture of orris .	ʒxx.

Windsor

A

Oil of cassia	℥j.
Oil of caraway	℥j.
Oil of thyme	℥j.
Oil of lavender	℥ij.

B

Oil of caraway	℥x.
Oil of bergamot	℥v.
Oil of lavender	℥iiss.
Oil of rosemary	℥iiss.

C

Oil of lavender	℥iv.
Oil of cassia	℥iij.
Oil of cloves	℥iiss.
Oil of caraway	℥j.
Oil of rose-geranium	℥v.
Oil of citronella	℥ij.
Artificial musk solution (1-per-cent.)	℥ss.
Tincture of storax (1 in 4)	℥ss.
Coumarin	℥iss.

Scarlet Coats, to Clean

The Army Regulations give the following instructions to soldiers for removing stains from scarlet coats:

Button or Hook Stains.—Rub dry pipeclay over the stained part, and brush with a clean hard brush.

Oil and Grease Stains.—(*a*) Rub the stain with a small piece of scarlet cloth soaked with methylated ether, or (*b*) powder dry pipeclay over the part, cover with clean blotting-paper, and press a hot iron upon the paper. Repeat until the stain is removed.

Stains from Perspiration or Dirt.—Dissolve ¼ oz. of salt of sorrel in 1 pint of boiling water. Apply all over the cloth or kersey garment with a clean hard brush, then sponge well with cold water.

These methods are equally serviceable for scarlet hunting-coats.

Tomato Sauce

Tomatoes	100 lbs.
Salt	18 oz.
Bay-leaves	½ oz.
Cloves	½ oz.
Onions	3 lbs.

Boil together in an enamelled pan for two hours, and pass through a nickel sieve. Put into bottles and seal, after exhausting the air, finally heating to a temperature of 220° to 225° F. for from fifteen to thirty minutes, according to the size of the containers. The following is a recipe for a more liquid preparation:—

Tomato-pulp	50 gals.
Vinegar	3 gals.
Sugar	15 lbs.
Salt	5 lbs.
Onion	5 lbs.
Garlic	½ lb.
Cayenne pepper	¼ lb.
Bay-leaves	½ oz.
Cinnamon	1 oz.

The onion and garlic are first cooked in part of the vinegar (it is better to use water and make it up to the acetic-acid strength at the end of the process) and then added to the other ingredients, except the powdered cinnamon, which is only put in at the end of the process.

Worcester Sauce

A

Garlic	12 oz.
Shallots	28 oz.
Tamarinds	28 oz.
Cloves	4 oz.
Powdered capsicum	4 oz.
Anchovies	3 lbs.
Oil of lemon	1 oz.
Sugar	4¼ lbs.
Soy	7 lbs.
Vinegar	5 gals.

Macerate for seven weeks, with frequent stirring, and strain.

B

Water	50 gals.
Anchovies	9 lbs.
Tamarinds	14 lbs.
Dried mushrooms	4 lbs.
Powdered fenugreek	2 lbs.
Salt	6 lbs.
Chopped garlic	5 lbs.
Roasted onions	10 lbs.
Cayenne pepper	1¾ lb.
Cloves	2½ lbs.
Ginger	1½ lb.
Oil of lemon	3 oz.
Acetic acid	a sufficiency

Boil all (except the acid and lemon oil) together for one hour. Then add acetic acid 2 gals. and the lemon oil, and put into a cask to mature, which takes from six to twelve months.

Seiler's Antiseptic

Sodium bicarbonate	ʒj.
Borax	ʒj.
Sodium benzoate	℈j.
Sodium salicylate	℈j.
Eucalyptol	gr. x.
Thymol	gr. x.
Menthol	gr. v.
Wintergreen oil	♏vj.
Glycerine	ʒviiiss.
Alcohol	ʒij.
Water to make	ʒcclvj.

Dissolve all the volatile ingredients in the alcohol, rub up the solution with the sodium salts, and dissolve in the water, finally adding the glycerine. Allow to stand in a large bottle, with occasional shaking, for at least two weeks before dispensing.

Seiler's Antiseptic Tablets

Sodium bicarbonate	ʒvij. ℈ij.
Borax	ʒvij. ℈ij.
Sodium benzoate	℈j.
Sodium salicylate	℈j.
Eucalyptol	gr. x.
Thymol	gr. x.
Wintergreen oil	♏iv.
Menthol	gr. v.

Make into tablets each weighing 15 gr.

German Shampooing-solution

Potassium carbonate	ʒx.
Solution of ammonia	ʒiss.
Sugar	ʒv.
Borax	ʒiiss.
Oil of bergamot	ʒss.
Oil of geranium	♏xv.
Oil of bitter almonds	♏xv.
Spirit	ʒij.
Rose-water	Ov.

Shaving-block

The transparent antiseptic shaving-block, for rubbing on the skin after shaving, is potash alum, or fused boric acid.

Sodii Oleas Acidus

Sodium hydroxide	25 grams
Oleic acid	280 grams
Water	25 c.c.
Alcohol (90-per-cent.)	50 c.c.

Dissolve the sodium hydroxide in the water, and add to a mixture of the oleic acid and alcohol; set aside in a warm place until clear, then pour into shallow dishes, dry in warm air, and reduce to powder.

For a neutral oleate use acid 285, soda 40, water 50, and alcohol 150.

These oleates are for internal use as an antilithic remedy.

Species Aromaticæ, Ph.G.

Peppermint-leaves, lemon thyme (*serpyllum*), thyme, and lavender flowers, of each 2 parts; cloves and cubebs (reduced together to coarse powder), of each 1 part.

Species Laxantes, Ph.G.
(*Abführender Thee*)

	Parts
Senna, cut small	160
Elder-flowers	100
Fennel and anise, of each	50
Potassium tartrate	25
Tartaric acid	16

Dissolve the tartrate in 50 of water and damp the senna with the solution. Half an hour later add the acid dissolved in 16 of water, then dry and mix with the other ingredients.

Species Lignorum, Ph.G.
(*Holzthee*)

Guaiacum-wood	℥v.
Lovage-root	℥iij.
Liquorice-root	℥j.
Sassafras	℥j.

Chop all up fine and mix.

Solidified Spirit

The processes employed for solidifying methylated spirit depend upon the formation of a soap in the liquid which enmeshes the spirit. *Spiritine* is the best example of this class: it is made by melting 4·5 parts of stearin, then adding to it 0·5 part of sodium carbonate (to saponify) and 95 parts of methylated spirit, heating for an hour in a closed vessel. The spirit may be coloured. The solidified product may be cut into cubes (or other shape) like jujubes.

Spiritus Saponatus, Ph.Neder.
(*Hebra's Soap Spirit*)

Potassium hydroxide solution (s.g. 1·456—*i.e.*, KOH 45 in 75 of solution)	75
Sesame oil	195
Spirit	200

Mix in a closed vessel, and agitate occasionally until the oil is saponified, then add—

Spirit	0
Water	378
Lavender oil	2

Compare with formulas on p. 766, and Liquid Soap, p. 944.

Starch Gloss

Borax	1 lb.
French chalk	12 oz.
Coconut-oil soap	4 oz.

All in fine powder, and mixed by sifting.

Glazing Starch

Powdered tragacanth	2 lbs.
Powdered spermaceti	4½ lbs.
Powdered borax	18 lbs.

Add the above to 1 cwt. of starch, taking care that the whole is thoroughly blended.

Steel-welding Powder

Dr Hans Goldschmidt's powder consists of aluminium in powder and iron oxide with a little barium peroxide and magnesium as an igniter. The aluminium on ignition unites with the oxygen of the Fe_2O_3 and thus gives a molten mass which welds pieces of steel brought into juxtaposition and suitably pressed together. The mixture of powders under the name *Thermit*, in various strengths according to the purposes for which it is required, is a commercial article.

Ginger-stout

Liquorice-juice	1½ lb.
Best hops	1½ lb.
Powdered gentian	2 oz.
Powdered cloves	2 oz.
Bruised Jamaica ginger	3 lbs.
Caramel	10 oz.

Bring 30 gals. of water to the boil, then add the above ingredients, boil for half an hour, and strain the liquor into the fermenting-tub, in which has been placed 12 lbs. of Demerara sugar. Ferment as directed on p. 845, and finally add 4 oz. of powdered citric acid.

With Saccharin

Liquorice-juice	20 oz.
Best hops	20 oz.
Powdered gentian	2 oz.
Powdered cloves	2 oz.
Bruised Jamaica ginger	2½ lbs.
Caramel	10 oz.

Follow the above directions, using 30 gals. of water, 6 lbs. of Demerara sugar, and 126 grs. of saccharin, finally adding 3 oz. of powdered citric acid.

Surgical Instruments

To remove rust from surgical instruments place the articles in a saturated solution of stannous chloride overnight and the rust disappears by reduction. Rinse the instruments in hot soap solution, finally immersing in alcohol, and dry. Paraffin is the best preservative against rust, and is used to greatest advantage in solution, one part of heavy petroleum oil being dissolved in 200 parts of petroleum spirit, and the instruments, quite dry, immersed in the solution. The grease penetrates all the joints and remains when the petroleum spirit has evaporated.

The following solution (really a liquid soap) is recommended by Dr. Karl Gilson as suitable for rapid disinfection of instruments:

Olei olivæ . . .	ʒiij.
Liq. potassæ . . .	ʒiiiss.
Alcoholis . . .	ʒxvj.
Aquæ destil. . . .	ʒviij.

The instruments should be thoroughly washed or wrapped in cotton-wool saturated with the solution, which may also be used for washing the hands of the operator and the skin of the patient.

Suppos. Bismuth. Subgal. Co.

(*Hæmorrhoidal Suppositories similar to Anusol*)

Ext. belladonnæ . .	gr. v.
Morphin. hydrochlor., Cocain. hydrochlor. aa.	gr. iss.
Bismuth. subgallat. . .	ʒss.
Ol. theobromatis . .	ʒvij.

Fiant suppositoria decem.

Syndetikon

(Dieterich's)

Calcium chloride . .	1 part
Water	4 parts
Glue	5 parts

Soak the glue for twelve hours, and dissolve on a water-bath.

Syr. Acidi Hydriodici

(*Glasgow Formulary*)

Tartaric acid crystals .	96 grs.
Potassium iodide . .	120 grs.

Dissolve each in water ʒss.; mix, shake, and after the precipitate has settled, decant, and add to—

Glycerine . .	2½ fl. oz.
Syrup to . . .	10 fl. oz.

ʒi. = iodine gr. j.

Asthma-syrup

Acid. sulphuric. dil. .	ʒij.
Spt. ætheris . . .	ʒiij.
Tr. capsici . . .	ʒss.
Tr. chlorof. co. (B.P. '85)	ʒij.
Mucil. tamarind. ad .	ʒiij.

ʒj. vel ʒij. ex aq. pro re natâ

Banana-syrup

Prepared from the fruit by mashing 1 lb. of bananas to a pulp, adding 1 pint of water and 5 pints of syrup, bringing to the boil, straining, and adding citric acid ʒij. dissolved in water ʒss.

Prepared artificially as follows:—

Syrup	1 gal.
Citric-acid solution (1 in 2)	½ oz.
Banana essence . .	1 oz.

Mix.

The banana essence is made by mixing—

Amyl butyrate . .	ʒss.
Amyl acetate . . .	ʒss.
Butyric ether . . .	ʒj.
Turmeric . . .	gr. viij.
Rectified spirit . .	ʒv.

Syr. Calcii Chloridi

Calcium chloride . .	℈xl.
Distilled water . .	ʒij.

Dissolve and add—

Syrup to	ʒxx.

Dose: ʒss. to ʒij.

The above is the syrup used in

Scotland. The B.P.C. one (*syn.* Elixir Calcii Chloridi) is calcium chloride ʒiiss., citric acid ʒj., distilled water ʒiij., aromatic syrup to ʒxx.

Cough-syrup

16

Oxymel. scillæ	ʒxij.
Syr. papaveris	ʒvj.
Spt. ætheris nitrosi	ʒij.
Tr. camphoræ co.	ʒviij.
Vin. ipecac.	ʒij.

17

Oxymel. scillæ	ʒij.
Oxymel. ipecacuan.	ʒj.
Syr. rhœados	ʒj.

18

Spt. anisi	ʒij.
Tr. chloroformi co.	ʒj.
Syrupi simplicis	ʒx.
Syrupi tolutani	ʒx.
Oxymellis scillæ	ʒx.
Aceti ipecacuanhæ	ʒij.
Acidi hydrobromici dil.	ʒj.
Coloris	q.s.
Aquæ	ʒxxx.

Raspberry Cough-syrup (24)

Vin. ipecacuanhæ	ʒj.
Vin. antimonialis	ʒiv.
Oxymel. scillæ	ʒij.
Syr. tolutan.	ʒij.
Inf. senegæ conc.	ʒiv.
Glycerini	ʒv.
Mucil. acaciæ	ʒiiss.
Acet. rub. idæi ad	ʒxx.

Adult dose: One or two teaspoonfuls in water.

Children's Cough-syrup

54

Liq. ammonii acetatis	ʒv.
Vini ipecacuanhæ	ʒxv.
Spt. ætheris nitrosi	ʒx.
Syrupi	ʒx.
Aquam ad	ʒxxx.

55

Oxymel. scillæ	ʒj.
Glycerini	ʒj.
Vin. ipecac.	ʒj.

Dose: 15 to 60 drops, according to age.

Children's Black Currant Cough-syrup

Liq. ammon. acet. (B.P. '85)	ʒss.
Ammonii bromidi	ʒij.
Ext. ipecac. liq.	ɱxv.
Tr. aurantii	ʒij.
Glycerini	ʒij.
Syr. tolutani	ʒij.
Syr. ribidis nig.	ʒij.
Liq. cocci	q.s.
Aq. chlorof. (B.P. '85) ad	ʒxij.

Cherry Cough-cure (4)

Syr. scillæ	ʒxx.
Syr. pruni virg.	ʒxx.
Morph. acet.	gr. xx.
Vin. antim.	ʒiij.
Spt. æther. nit.	ʒij.
Tr. camph. co.	ʒiij.

ʒj. vel ʒij. ter die.

Curative Syrup (140)

Ext. aloes	ʒss.
Ext. gentianæ	ʒss.
Ext. taraxaci	ʒj.
Ext. cascar. sagrad.	ʒiij.
Pulv. cinchonæ	ʒj.
Potassii carbonatis	ʒss.
Pulv. boracis	ʒss.
Pulv. capsici	ʒij.
Spt. rectificati	ʒiv.
Tr. nucis vomicæ	ʒiss.
Tr. belladonnæ	ʒiss.
Theriacæ	lb. ij.
Ol. gaultheriæ	ɱxl.
Ol. sassafras	ʒj.
Aquam ad	ʒlxxx.

Cure for Diarrhœa

Tr. catechu	ʒvj.
Tr. kino	ʒivss.
Tr. opii	ʒj.
Tr. capsici	ʒj.
Ol. menthæ piperitæ	ʒj.
Syrupi simplicis	ʒxij.

Syrupus Ferri Citratis

Place in a flask 15 grams (ʒiij. gr. xxiss.) of citric acid, 3·4 grams (ʒj.) of iron, and 280 c.c. (ʒx.) of water; fit with a glass tube,

and gently warm the flask on a water-bath. Solution of the iron is fairly rapid, as a slight excess of citric acid is used. Filter the solution, and add water to make up to 300 c.c. (ʒxss.); add 100 grams (ʒiiiss.) of Garus's elixir and sufficient sugar to make the weight of the whole 1,000 grams (ʒxxxij.).

The syrup contains 1·5 per cent. of citrate of iron.

Garus's Elixir (Elixir Gari) for the above is made from *Alcoolat de Garus* (French Codex), which is prepared by macerating aloes, cloves, and saffron, of each 5 grams, myrrh 2 grams, Ceylon cinnamon 20 grams, and nutmeg 10 grams, in 5,000 grams of 80-per-cent. alcohol for four days, then adding a litre of water and distilling 4,500 grams.

The Elixir

Alcoolat de Garus .	1,000 grams
Vanilla . . .	1 gram
Saffron . . .	0·5 gram

Macerate two days and filter. Separately infuse Canadian maidenhair 20 grams in boiling distilled water 500 grams half an hour, press, and add sugar 1,000 grams, orange-flower water 200 grams; dissolve, add the tincture, and filter.

Syrupus Ferri Phosphatum Co.

Dark grain cochineal .	8 oz.
Distilled water . .	2 gals.

Put the cochineal into a muslin bag that will hold 3 lbs. or so, tie up, and place in the water; bring it to the boil, and continue to boil gently until the cochineal is exhausted; then filter, making up the filtrate to 2 gals. In this dissolve—

Pharmaceutical sugar .	40 lbs.

Cool, strain, and set aside. Now prepare a phosphate solution thus:

Iron wire . . .	3 oz.
Phosphoric acid, sp. gr. 1·750	32 oz.
Distilled water . .	32 oz.

Mix the water and the acid, and dissolve the iron wire in the mixture. When the action ceases, filter if necessary, and to the filtrate add the following mixture:—

Sodium phosphate . .	1 oz.
Potassium carbonate .	3 oz.
Precipitated calcium phosphate	6 oz.
Distilled water . .	86 oz.

Stir well together, and promote solution by heating cautiously if necessary. Filter the solution, and add it slowly to the syrup, keeping it well agitated the while.

The specific gravity of the product should lie between 1·300 and 1·320. Flavouring, such as orange-flower water, may be added, if desired, allowance being made for it by omitting as much water.

Syrupus Glycerophosphatum

Iron glycerophosphate .	gr. xxij.
Magnesium glycerophosphate	gr. xliv.
Sodium glycerophosphate	gr. xliv.
Potassium glycerophosphate	gr. xliv.
Glycerophosphoric acid .	gr. xliv.
Caffeine alkaloid . .	gr. xxij.
Sugar	ʒxiv.
Spirit of chloroform .	ʒiiss.
Essence of vanilla . .	ʒiiss.
Glycerine of saffron .	ʒj. mxv.
Cinnamon-water to . .	ʒxx.

Syr. Glycerophosph. et Nuc. Vom.

Iron glycerophosphate .	gr. xliv.
Magnesium glycerophosphate	ʒj. gr. xxviij.
Sod. glycerophosphate	ʒj. gr. xxviij.
Pot. glycerophosphate	ʒj. gr. xxviij
Glycerophosphoric acid	ʒj. gr. xxviij.
Caffeine alkaloid . .	gr. xliv.
Tincture of nux vomica	ʒiss. mxlviij.
Sugar	ʒxiv.
Cudbear . . .	ʒij.
Chloroform . . .	mxlviij.
Alcohol	ʒss.
Water to . .	ʒxx.

These two formulas were origin-

ally published by the Glasgow Chemists' Association.

Syr. Hypophosphitum Co.

Ferri hypophosphitis	ʒv.
Potassii citratis	ʒij.
Manganesii hypophosphitis	ʒiv.
Sodii hypophosphitis	ʒv.
Potassii hypophosphitis	ʒv.
Calcii hypophosphitis	ʒviij.
Quininæ hydrochloridi	ʒij. ℈ij.
Strychninæ hydrochloridi.	gr. viij.
Glycerini	ʒx.
Glucosi	ʒxvj.
Aquæ destillatæ	ʒxxv.
Syrup. ad	Oviij.

Rub the iron hypophosphite and potassium citrate with 2 oz. of water in a mortar, then add the rest of the hypophosphites, the glycerine, and the remainder of the water, stirring well. Meanwhile dissolve the solid glucose in 6 pints of simple syrup by heating, and, this done, add the quinine and strychnine, dissolve, then add the hypophosphite mixture as above, continuing the heat until solution is complete. Strain, and make up to a gallon with simple syrup.

ʒj. = quinine hydrochloride gr. $\frac{1}{8}$ and strychnine hydrochloride gr. $\frac{1}{160}$.

Syr. Kolæ Co.

Strychnine nitrate	gr. j.
Fluid extract of kola	ʒvj.
Sodium glycerophosphate	ʒvj.

Dissolve with a gentle heat in —

Syrup of orange-peel	ʒvj.

Syrupus Limonis

(Miss M. I. Bedell's)

Tr. limonis	ʒv.
Acid. citric.	ʒij.
Syrupi	ʒL.

Dissolve the acid in the tincture and strain through cotton-wool into the syrup.

(Dr. Hemman's, for dispensing)

Ol. limonis	ʒss.
Tr. quillaiæ	ʒss.
Aq. ad	ʒj.

Shake, then add —

Syrup. ad	ʒxv.

Lemonade-syrup

(For aërated waters)

Take the head out of a suitable cask, and bore a hole about 5 in. from the bottom (inside). Rub up 5½ oz. of magnesium carbonate with 13 oz. of oil of lemon; then make 40 gals. of syrup, and when cool thoroughly whisk in the lemon and magnesia mixture. When quite cool, well mix in 10 oz. of calcium-bisulphite solution. Let the contents of the cask settle for four or five days, draw off from the tap-hole, and acidulate for use as required.

When half-empty it is a good plan to fill up the cask again, as if magnesia and lemon are thus added from time to time the flavour of the syrup improves very much.

The acid is added to the syrup after drawing it off from the cask.

Lemon-syrup

(For temperance drinks)

Soluble essence of lemon	13 pints
Soluble essence of limes.	6 oz.
Lemon-colouring	12 oz.
Caramel	10 dr.
Concentrated rose-water (1–40)	6 dr.
Citric-acid solution	3¾ gals.
Syrup	80 gals.

Mix, and add the following solution: —

Sodium phosphate.	3½ oz.
Sodium acetate	3½ oz.
Salicylic acid	3½ oz.
Water to	35 oz.

The *Solution of Citric Acid* is

made by dissolving 21 lbs. of the acid in 3 gals. of boiling water.

Lemon-colouring is a solution of lemon yellow 1 lb., golden caramel 24 lbs., and water 2 gals., prepared by heat and filtered when cold.

Note.—Syrups of this nature for exportation to Australia should not contain preservatives.

Pectoral Syrup

Syrup. scillæ	♏xx.
Syrup. tolutani	♏xx.
Ext. glycyrrhiz. liq.	♏xv.
Vin. ipecacuanhæ	♏v.

Misce pro dosis.

Syr. Potassii Sulphocreosotatis

(*Sulphonin Sirup, resembling Sulfosit Sirup*)

Potass. sulphocreosot.	gr. xxv.
Potass. sulphoguaiacol.	gr. xxv.
Aquæ dest.	ʒix.
Ext. gentianæ liq.	♏xv.
Syr. simpl. ad	ʒxxv.

All by weight.

Syrupus Sarsæ (S. Smith)

(Leeds Infirmary)

Radicis sarsæ	lb. iij.
Sacchari albi	lb. viij.
Aquam ad	Cong. iij.

Boil the sarsaparilla in 2 gals. of water down to 1 gal., strain, and set aside. Repeat this twice, and in the 3 gals. of liquor dissolve the sugar.

Dose: One pint daily.

Soothing-syrup

5

Potassii bromidi	ʒiss.
Sodii bicarbonatis	ʒiij.
Aquæ	℥vj.
Tr. zingiberis	ʒiss.
Aq. anethi conc. (1 in 40)	ʒij.
Olei carui	♏vj.
Syrup. ad	℥xij.

6

Potass. bromid.	ʒj.
Sodii biboratis	ʒj.
Tr. prun. virg.	ʒv.
Tr. card. co.	ʒvj.
Ess. zingib.	ʒiij.
Spt. ammon. arom.	ʒiij.
Spt. chloroform.	ʒiss.
Bals. anisi	℥v.
Syr. simpl.	℥vj.
Aq. ad	℥xx.

Sirupus Thymi, D.A.V.

Thymian-Keuchhustensaft

(*See* p. 791.)

Whooping-cough Linctus

Fluid extract of thyme	ʒx.
Sodium bromide	ʒj.
Glycerine	℥j.
Syrup	℥ivss.

All by weight.

This is a variation of the formula on p. 791.

Syrup of Tolu

(Dr. Hemman's, for dispensaries)

Bals. tolut.	ʒvj.
Ext. quillaiæ liq.	ʒj.
Spt. vini rect. ad	℥iss.

Dissolve; add this to—

Syrup. ad	℥xxiv.

Shake and filter.

A new French method is as follows:—Dissolve 5 parts of tolu in 10 parts of 90-per-cent alcohol and mix with 45 parts of clean sand, the sand being stirred till all the alcohol has evaporated This granulated balsam is percolated with boiling water, and the sugar dissolved in the percolate.

Worm-syrup (4)

Ext. spigeliæ liq.	ʒiiss.
Syr. sennæ ad	℥ij.

Syrupus Tussilaginis, B.P.C.

Dried coltsfoot-flowers 6 oz. 350 gr.
Boiling distilled water 10 fl. oz.

Infuse for six hours, strain, press, and filter. Add to the filtrate twice its weight of refined sugar, heat to dissolve, then boil and add sufficient cold distilled water to the syrup when cold to make the product 20 oz. in weight.

Dose: 3ss. to 3j.

Compressed Tablets

Mr. Edwin Thompson, of Manchester, writing in regard to the production of compressed tablets (*C. & D.*, 1906, II., 344), says the main things to remember in making tablets are:—

1. Reduce the drugs to a very fine powder before moistening.
2. Have the material thoroughly dry before attempting to compress.
3. Properly lubricate the mass so that it will not adhere to the dies, but do not use any more lubricant than is absolutely necessary.
4. Have a suitable granule, as it is really on this that success in tablet-making depends.

Several points from Mr. Thompson's experience deserve quotation, although they traverse in some respects the ground covered earlier in this book, and we put these, like the 'main things,' in the form of aphorisms:—

The most useful lubricants are talc (½ to 2 per cent.) and 2-per-cent. solution of white soft paraffin or vaseline in ether sprayed on to the powder before compression.

Lycopodium, starch, and in some cases, where a completely soluble tablet is required—as in hypodermics and photographic tablets—powdered boric acid are also useful lubricants.

When the lubricant is a powder it should be sifted on to the material spread out on paper, and lightly stirred so as not to break the granules.

A mixture of glucose and water tends to form a hard tablet—an advantage when it is required to be dissolved slowly in the mouth.

Chlorate of potassium, if used in the granular form, needs no preparation, and can be put through the machine straight away after being passed through a No. 20 sieve. Ammonium chloride and monobromated camphor can also be prepared in this way.

Phenacetin should be mixed with a little sugar and then moistened with a few drops of syrup and water and passed through a No. 20 sieve. When dry it should be again passed through a sieve and then lubricated with either ether-paraffin solution or talc, not exceeding 2 per cent.—probably a little over 1 per cent. will do. In this way tablets of sulphonal, bismuth salicylate, bismuth subnitrate, acetanilide, antipyrin, salicin, and quinine sulphate are made.

If the tablet contains much bicarbonate of sodium it is advisable to use a small quantity of acacia as well as sugar.

Powders of a hygroscopic or deliquescent nature need to be mixed with acacia before granulating.

In making tablets from salts containing much water of crystallisation, such as zinc sulphate and alum, the salts must be first thoroughly dried, then mixed with any other ingredients, moistened, and passed through a No. 20 sieve, dried, passed through the sieve again, and compressed. If necessary, a little acacia may be added before granulating.

Fluid extracts should be evaporated to a syrupy consistence, and rubbed up with a small quantity of starch or arrow-root. The extract is then suitable for granulating.

Solid extracts should be moistened with a little water, then treated as in the case of fluid extracts.

Pepsin in powder should be mixed with cane sugar or sugar of milk, moistened carefully with 60-per-cent. alcohol, and compressed into tablets, using as a lubricant talc or vaseline solution.

Scale preparations should be reduced to No. 30 or 40 powder before compressing. A little talc may be necessary.

Dover's powder, compound liquorice powder, and saccharated oxide of iron can be made into tablets by adding a few drops of diluted syrup, sifting, drying, and sifting again.

Soda-mint tablets are made by mixing sodium bicarbonate, powdered acacia, and oil of peppermint, and granulating by means of alcohol and water. Sometimes the oil of peppermint is added after the other ingredients are granulated and dried, being dissolved in 90-per-cent. alcohol and sprayed on to the material, which must be dried again before compressing.

In making hypodermic tablets particular care must be taken to have everything aseptic; only purified salts should be employed, and the water used for moistening should have been recently boiled.

The formulas now given with

titles in italics are from Wood's 'Tablet Manufacture,' further to illustrate methods, and in each case the quantities of ingredients are for 7,000 tablets; the figures on the left are the grains in each tablet. As there are 7,000 grains in 1 lb., this is a convenient basis for constructing formulas.

Absorbent Dyspeptic

1	Pepsin	1 lb.
2	Charcoal	2 lbs.
2½	Sodium bicarbonate	2½ lbs.
	Starch	1 lb.
	White dextrin	½ lb.
	Total weight,	7 lbs.

Lubricant, oil. Die, ⅜ in. Weight, 7 grs.

Aloin, Belladonna, Strychnine, and Ext. of Cascara Sagrada

⅕	Aloin	1,400 gr.
⅛	Ext. of belladonna	2 oz.
1/120	Strychnine sulphate 58·3 grains with milk sugar to	583 gr.
½	Ext. of cascara sagrada	8 oz.
	Starch	4 oz.
	Milk sugar	4 oz.
	Total weight dry,	1¼ lb.

Die, 7/32 in. Weight 1¼ gr.

Blaud's Pill Tablets

(J. H. Franklin)

Glucosated carbonate of iron	1,000 gr.
Liquid glucose (3 parts), water (1 part)	a sufficient quantity
Lubricant	a sufficient quantity

To make 600 tablets, each containing 1 gr. ferrous carbonate.

Chlorodyne

⅙	Morphine hydrochloride	1,167 gr.
¼	Ext. of cannabis indica	4 oz.
1/300	Nitroglycerine (10-per-cent. solution)	233 min.
½	Ext. of henbane	8 oz.
1/10	Oleo-resin of capsicum	700 min.
1/10	Oil of peppermint	700 min.
	Calcined magnesia	2 oz.
	Starch	8 oz.
	Sugar of milk	1 lb.
	Total weight dry,	2½ lbs.

(Not counting oil or oleo-resin.)

Die, 9/32 in. Weight, 2⅔ grs.

The oil of peppermint and oleo-resin of capsicum should be mixed with sufficient bland oil to make 7,000 drops, and one drop put on each tablet.

Cough

1	Ammonium carbonate	1 lb.
¾	Squill, powdered	12 oz.
¾	Senega, powdered	12 oz.
5	Paregoric elixir =	
	Opium, powdered	140 grs.
	Camphor	140 grs.
	Benzoic acid	140 grs.
	Oil of anise	140 min.
	Saccharin	140 grs.
	Milk-sugar	12 oz.
	Talc, powdered (lubricant)	2 oz.
	Acacia mucilage (20 per cent.)	a sufficiency
	Total weight dry,	3½ lbs.

Mix the squill, senega, opium, benzoic acid, saccharin, and milk-sugar, and granulate with the acacia mucilage. Dry, and sift (No. 20). Dissolve the camphor in the oil of anise and add to the granulation. Reduce a sufficient quantity of ammonium carbonate to make 1 lb. of No. 30 or 40 granule, free from powder which

will pass through a No. 50 sieve. Lubricate this with the talc and mix with the granulation.

Die, $\frac{5}{16}$ in. Weight, $3\frac{1}{2}$ grs.

Cough Tablets

Ol. anisi	℥xvj.
Acid. benzoic.	℥xiv.
Ol. menth. pulegii	℥ij. ℥v. ♏xx.
Ol. menth. pip.	℥viij.
Sol. capsici	℥j.

Use 1 dr. to 1 lb. of base.

Lead and Opium Lotion

5 Lead acetate	5 lbs.
¼ Ext. of opium	4 oz.
Ammonium chloride, granular	4 lbs.
Boric acid, powdered	1 lb. 3 oz.
Syrup 3 vol., water 1 vol.	a sufficiency

Total weight dry, 10 lbs.

Dry the lead acetate at about 110° F. Mix with $2\frac{1}{2}$ oz. of the ext. of opium and 14 oz. of the boric acid, granulate, and dry. Mix the ammonium chloride with the balance ($1\frac{1}{2}$ oz.) of the ext. of opium, moisten just enough to produce a uniform colour, and dry. Mix the dry granulations, lubricate with the balance (5 oz.) of the boric acid, and compress.

The ammonium chloride is used to increase the solubility of the lead acetate. Decomposition results when the salts are heated together, hence the necessity for separate granulation.

Die, $\frac{7}{16}$ in. Weight, 10 grs.

Potassium Chlorate and Borax

$2\frac{1}{2}$ Potassium chlorate, No. 16	$2\frac{1}{2}$ lbs.
$2\frac{1}{2}$ Borax, powdered	$2\frac{1}{2}$ lbs.
Syrup 3 vol., water 1 vol.	a sufficiency

Total weight dry, $5\frac{1}{4}$ lbs.

Granulate the borax with the syrup and water. Dry, and lubricate with oil. Mix with the potassium chlorate gently.

Die, $\frac{3}{8}$ in. Weight, $5\frac{1}{4}$ grs.

Phenolphthalein Tablets

Phenolphthalein	℥iiss.
Sugar of milk	℥ij.
Starch	gr. xxiv.
Oil of peppermint	♏ij.

To make 100 tablets.

One is a dose for an adult.

Rhinitis Tablets

(Dr. Lincoln)

¼ Camphor	4 oz.
⅛ Fl. ext. belladonna-root	875 min.
¼ Quinine sulphate trituration	4 oz.
Cane sugar	6 oz.
Milk sugar	6 oz.

Total weight dry, $1\frac{1}{4}$ lb.

Die, $\frac{7}{32}$ inch. Weight, $1\frac{1}{4}$ gr.

The quinine trituration for these tablets is made by drying quinine sulphate at 125° F. for several hours and adding 11·5 per cent. of powdered starch to the weight of the salt when dried.

[The title is exempt from stamp-duty.]

Terpin Hydrate and Cocaine

2 Terpin hydrate	2 lbs.
⅛ Codeine sulphate	2 oz.
Starch	8 oz.
Acacia starch-paste	5 oz.

Total weight dry, $2\frac{3}{4}$ lbs.

Die, $\frac{9}{32}$ in. Weight, $2\frac{3}{4}$ grs.

Terpin Hydrate and Heroin

$2\frac{1}{2}$ Terpin hydrate	$2\frac{1}{2}$ lbs.
$\frac{1}{16}$ Heroin	1 oz.
Starch	$8\frac{1}{2}$ oz.
Acacia starch-paste	6 oz.

Total weight dry, $3\frac{1}{4}$ lbs.

Die, $\frac{6}{16}$ in. Weight, $3\frac{1}{4}$ grs.

Soda Mint

5 Sodium bicarbonate gran.	5 lbs.
Oil of peppermint. .	½ oz.

Die, $\frac{5}{16}$ in. Weight, 5 grs.

Mentholic Throat

$\frac{1}{35}$ Menthol . .	200 grs.
$\frac{1}{280}$ Cocaine hydrochloride	25 grs.
$\frac{1}{80}$ Oil of anise .	88 min.
$\frac{1}{12}$ Benzoic acid .	583 grs.
$\frac{1}{16}$ Eucalyptol .	1 oz.
Cane sugar	4 lbs. 13 oz.

Total weight, 5 lbs.

Dissolve the cocaine in water, mix with the sugar, and granulate. Warm the other ingredients together until dissolved, and use as a lubricant.

Die, $\frac{11}{32}$ in. Weight, 5 grs.

It is frequently desirable to make a tablet similar to this, but milder and larger. The cocaine is better omitted when the tablet is used to supply a popular demand:—

$\frac{1}{50}$ Menthol . .	140 grs.
$\frac{1}{50}$ Oil of anise (or wintergreen) . .	140 min.
$\frac{1}{12}$ Benzoic acid .	583 grs.
$\frac{1}{32}$ Eucalyptol . .	½ oz.
Cane sugar	9 lbs. 14 oz.

Total weight, 10 lbs.

Die, $\frac{3}{4}$ in. Weight, 10 grs.

Cold-tablets

Quinine sulphate . .	½ gr.
Camphor . . .	½ gr.
Podophyllin . . .	$\frac{1}{40}$ gr.
Acetanilide . . .	1 gr.
Powdered capsicum. .	$\frac{1}{10}$ gr.
Tincture of aconite . .	¼ min.
Dover's powder . .	½ gr.
Powdered cascara extract	1 gr.

For one tablet.

Dose: For influenza and colds take two tablets, and repeat in two hours: then take one tablet every two hours for not more than four doses.

Anæmia Tablets or Tonic Tablets

Hæmoglobini . .	gr. ss.
Ferri peroxidi hydrat. .	gr. ¼
Ext. cascaræ sagradæ .	gr. ½
Ext. nuc. vom. . .	gr. $\frac{1}{32}$

Ft. tab.

Removal of Tattoo-marks

French Method.—First, apply a concentrated solution of tannin, then needle the parts tattooed. The needling can be done with the closely set needles employed by tattooers. In any case the needling must be close set. In this way some of the tannin finds its way into the tissues. Solid silver nitrate (ordinary point in holder) is then rubbed in firmly. The concentrated solution of silver nitrate is allowed to act on the epidermis and derma for a few moments until the needled points stand out as black dots. The caustic solution is then removed by wiping. The tattooed parts become blackened by the formation of silver tannate in the superficial parts of the skin. The applications can be made very quickly, and are not very painful. As a result of the cauterisation an eschar forms, which comes away in about two weeks, and leaves a very superficial scar, which becomes scarcely visible. *See* also *C. & D.*, 1912, II., 272.

Dr. Thatcher's Carminative

Magnesii carbonat. levis .	℥iss.
Sacchari anisi . . .	℥ij. ℥ij.
Tr. camphoræ co. . .	℥iij.
Aquæ anethi . . .	℥xxiv.

M.

Thresh's Alkaloidal Reagent

(Modification of Mayer's Solution)

Liquor. bismuthi . .	℥j.
Potassii iodidi . .	℥iss.
Acidi hydrochlorici .	℥iss.

M.

Thrush-wash

Tr. cardam. co.	ʒj.
Boracis	ʒj.
Glycer. boracis	ʒv.
Aquæ	℥iss.

Tr. Cardamomi Co.

(McCutcheon's Improved)

Oil of caraway	20 min.
Oil of cinnamon	12 min.
Oil of cardamoms	20 min.
Cochineal (in powder)	220 grs.
Glycerine	4 oz.
Alcohol (60-per-cent.)	80 oz.

Macerate for a few days, and filter.

This is more suitable than the B.P. tincture for colouring and flavouring bismuth preparations.

Tr. Chinæ Co., Ph.G.

(syn. *Elixir Roborans Whytei*)

Cinchona (Crown bark)	6 parts
Bitter-orange peel	2 ,,
Gentian-root	2 ,,
Ceylon cinnamon	1 ,,
Dilute spirit (sp. gr. 0·892)	50 ,,

All by weight. Macerate eight days and filter.

Tr. Ferri Acetatis (B.P. 1885)

Strong solution of iron acetate	5 fl. oz.
Acetic acid	1 fl. oz.
Rectified spirit	5 fl. oz.
Distilled water	9 fl. oz.

Mix, and add distilled water to 20 oz.

Dose: 5 to 30 minims.

Liq. Ferri Acet. Fort., B.P. 1885, was four times the strength of Liq. Ferri Acet., B.P. 1898.

Tr. Ferri Chloridi, U.S.P.

Solution of ferric chloride 350 c.c.
Alcohol to 1,000 c.c.

(Liq. ferri chloridi contains 29 per cent. of $FeCl_3$, and is made like liq. ferri perchloridi fort., B.P., *see* p. 899.)

Tr. Ferri Co.

Saccharated iron oxide	75 grams
Water	574 grams
Simple syrup	180 grams
Rectified spirit (90-per-cent.)	165 grams
Tincture of orange	3 grams
Tincture of vanilla	1·5 gram
Aromatic tincture	1·5 gram
Acetic ether	5 drops

Dissolve the saccharated oxide in the water, and add the other ingredients.

This preparation is a variant of Tr. Ferri Arom., D.A.V., p. 802, and represents *Athenstadt's Iron Tincture*. The *Saccharated Iron Oxide* is made by mixing 30 grams of ferric-chloride solution (10-per-cent.) and 150 c.c. of distilled water, and adding to it a solution of crystallised sodium carbonate 26 grams in 150 c.c. of distilled water. Add five times as much water, collect the precipitate, and wash it until free from chloride. Allow to drain well, and mix with 50 grams of powdered sugar and 3 grams of 15-per-cent. soda solution. Heat on a water-bath until a clear solution is obtained (adding a little more soda if necessary), then evaporate to dryness, and powder, adding powdered sugar to make 100 grams.

Tr. Ferri Pomata, Ph.G.

Ext. ferri pomat.	pt. j.
Aq. cinnamomi	pt. ix.

Misce et filtra.

Tr. Lignorum

Buds of abies excelsa	℥iij.
Guaiacum-wood	ʒij.
Sassafras	ʒj.
Juniper-berries	ʒj.
Rectified spirit	℥xxxvj.

Macerate for eight days and filter.

An old Prussian preparation.

Tr. Laricis Co.
(*Bone's Bitters*)

Tamarac bark	℥vj.
Juniper berries	℥vj.
Prickly-ash bark	℥iv.
Wild-cherry bark	℥iij.
Seneca snake-root	℥iij.
Tansy	℥j.
Whisky	℥lxxx.
Molasses (by measure)	℥xxiv.
Hydro-alcoholic extract of mandrake	℥iss.
Water	a sufficiency

The powdered drugs are macerated in 60 oz. of the whisky, then transferred to a vapour displacement apparatus, and the vapour of the rest of the whisky forced through the percolator, after which steam is passed through to make 394 oz. of percolate, in which the molasses and extract are dissolved.

Tr. Quininæ Ammoniata

(W. Bastick's original formula for 'Ammoniated Solution of Quinine')

Quinæ disulphatis	gr. xxxij.
Spiritus tenuioris	℥iiiss.
Liquoris ammoniæ	℥ss.

Mix the quinine with the spirit, and add the ammonia.

Note. — The late Mr. Lloyd Bullock was really the originator of the ammoniated preparation of quinine. Mr. Bastick informed the author that his 'solution' was an imitation of Mr. Bullock's, which he believed to be made with spt. ammon. arom.

Toothache-tinctures

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Tr. opii	℥ij.
Tr. pyrethri	℥ij.
Spt. camphoræ	℥ij.
Chloroformi	℥j.

99

Acid. carbolici	ʒiss.
Bacc. capsici	ʒij.
Pulv. opii	ʒij.
Ol. caryophylli	℥ss.
Chloroformi	℥v.

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Tannini	ʒj.
Camphoræ	℥ss.
Ol. caryophylli	℥ss.
Tr. krameriæ	℥ss.
Tr. pyrethri	℥ij.
Chloroformi	℥j.
Spt. vini	℥iiss.

125

Mentholis	ʒj.
Camphoræ	ʒij.
Olei caryophylli	ʒij.
Olei cajuputi	ʒij.
Tr. lavandulæ co.	ɱxv.
Tr. pyrethri	℥ss.
Spt. rectificat. ad	℥iss.

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Chloroformi	ʒj.
Tr. capsici	℥j.
Tr. opii	℥j.

Stock Tooth-paste

Pulv. aluminis ust.	℥ij.
Pulv. potassii bitart.	ʒiv.
Cretæ præcipitatæ	ʒiv.
Mellis	lb. ij.
Glycerini	℥viij.

Mix together in a large basin or jar, place in a water-bath, and heat for two hours or so until effervescence ceases, then add to and rub well up with the following :—

Pulv. cocci cacti	℥ij.
Pulv. nucis arecæ	℥ss.
Potassii carbonatis	℥j.
Pulv. lapidis pumic. lævig.	℥viij.
Pulv. iridis	℥xvj.

Half fill suitable jars with the paste, and set aside for several days, until the colour changes from a dirty purple to a deep carmine, and signs of escaping gas cease.

The paste may be kept so until it has to be potted, when it is prepared by rubbing each pound of it well in a mortar with an ounce of glycerine and half an ounce of the following

Tooth-paste Perfume

Ol. rosæ	ʒj.
Ol. cinnamomi	ʒij.
Ol. caryophylli	ʒix.
Ol. limonis	ʒvij.
Ess. vanillæ	ʒiij.
Spt. rectificati	ʒix.

Tooth-paste

Starch	ʒss.
Water	ʒss.
Glycerine	ʒviij.

Make starch glycerite, and add—

Soft soap	ʒj.
Oil of peppermint	ʒss.

Colouring (if desired).

Mix and work in

Fine precipitated chalk	ʒviij.

In this formula, by Mr. H. C. Blair, the peppermint is in excess; ʒj. is sufficient.

Tooth-powders

Mr. Stanley Read, L.D.S., in a communication to the British Pharmaceutical Conference, submitted the following as typical of the ingredients of a powder for a man with hard, strong teeth, who smoked many cigarettes:—

Sapon. hisp.	ʒj. :	to break up any greasy matter on the teeth.
Cretæ præcip.	ʒj. :	the usual polishing-agent.
Ossis sepiæ	ʒj. ;	in the case of poor teeth or for a woman omit this.
Mag. carb. pond.	ʒj. :	antacid.
Otto rosæ	♏j.	

A distinguished Anglo-American authority writes: 'Tooth-powders should be composed solely of materials ultimately soluble in the mouth fluids. Insoluble materials of all kinds are objectionable not so much for any damage they may do directly but because insoluble particles lodge under the gum margins and form foci for deposits of calculus or tartar, and thereby cause recession of the gums. This applies to all vegetable powders in particular (note what results the use of charcoal produces) and to such substances as infusorial earth, cuttle-fish bone, pumice, talc, and terra alba. Chalk and magnesia are ultimately soluble. The use of infusorial earth or kieselguhr in a tooth-powder is almost criminal. It will cut a denture to pieces, being harder than the enamel, while if the cementum is exposed above the gums from any cause it renders the teeth exquisitely sensitive and diminishes their resisting power to decay. Silica in any form should be absolutely barred from dentifrices. Carbolic acid, thymol, and similar antiseptics should not be used steadily. The continued use of these mucous anæsthetics numbs the nerve endings, and soon markedly diminishes the delicacy of the sense of taste. The addition of sodium bicarbonate is excellent, especially where there is a tendency to pyorrhœa and tartar deposits. Milk of lime is also a good addition where there is much decay and when the saliva is very viscid. It is an excellent solvent for the mucous plaques which form the breeding ground of the micro-organisms of decay.'

Carbolic Tooth-powder

I

Pulv. saponis	lb. iij.
Pulv. iridis	lb. ij.
Cretæ præcipitatæ	lb. viij.
Ol. caryophylli	ʒss.
Ol. lavandulæ ang.	ʒvj.
Ol. rosæ	ʒij.
Acidi carbolici	ʒiiiss.
Terræ rosæ	ʒvj.

Triturate the rose pink with twice its weight of chalk, add more chalk, from time to time, triturating until it is thoroughly blended; add the soap also; separately triturate the

perfumes and acid with the orris, and mix with the chalk by sifting.

The soap used is Gibbs's Old Brown Windsor, dried and powdered.

II

Kaolin	ʒxij.
Cornflour	ʒiv.
Carbolic acid	ʒvj.
Powdered quillaia extract	ʒij.
Eosin	gr. iv.
Oil of rose-geranium	♏xx.
Oil of lavender	♏xv.

The eosin must be first dissolved in a little water and triturated with part of the kaolin, the perfumes and carbolic acid being also mixed with the cornflour before mixing with the kaolin and sifting.

Note.—Carbolic acid tooth-powders are the better for 20 per cent. of starch in them. Rub the phenol with this, and set aside for a week before adding the other ingredients. It matters not, then, whether chalk is in the dentifrice or not.

Tobacco-flavour

Tr. valerianæ	ʒij.
Tr. tonkæ	ʒvj.
Coumarin.	gr xv.
Spt. jamaïcensis	ʒiiss.
Ext. violæ flor. ad	ʒx.

Phosphorus Tonic

Liq. ferri phosph. mag.	ʒx.
Acid. phosph. dil.	ʒv.
Glycerini	ʒxxx.
Quininæ sulph.	gr. cc.
Spt. chloroformi	ʒxx.
Aquam ad	Cong. ij.

Dose: A liqueur glassful.

Universal Tonic

Ferri et quin. cit.	ʒj.
Magnes. sulph.	ʒiij.
Tr. aurantii	ʒiij.
Aq. chlorof. ad	ʒviij.

ʒss. t.d.s. p.c.

Tree-banding Mixtures

1. Mix equal parts of cart-grease and soft soap.

2. Resin 5 lbs., fish oil 1 gal. Boil together.

3. Resin 36 oz., rape oil 36 oz., Venice turpentine 20 oz., wood tar 5 oz., oil of turpentine 3 oz.

Mix by heating and stirring.

The mixture is spread upon grease-proof paper, and the paper affixed to the tree (sticky side out), about 4 ft. from the ground.

Cough-lozenges

24

Pulv. ipecac., Pulv. scillæ	aa.	ʒj.	
Acid. tartaric.		ʒij.	℈ij.
Antim. tart.		℈ij.	
Otto rosæ		♏xvj.	
Morphinæ mur.		ʒj.	℈j.
Sacch. alb.		lb.	vj.

Divide in troch. ℈j. singul.

25

Antim. tart. et morphin. mur.	aa.	gr. v.	
Pulv. acaciæ et trag.	aa.	ʒss.	
Pulv scillæ et ipec.	aa.	℈ij.	
Ac. citric. et ext. glycyr.	aa.	ʒj.	
Ol. limonis		gtt. xx.	
Potass. bitart.		ʒiiss.	
Pastæ rib. nig.		ʒviij.	

Pine-tree Lozenges

Powdered acacia	1 lb.
Extract of liquorice	1 lb.
White sugar	14 lbs.
Arrowroot	7 lbs.
Tartaric acid	1 oz.
Paregoric elixir	2 oz.
Powdered ipecacuanha	½ oz.
Oil of pumilio pine	2 dr.

Mix into a paste with sufficient water, and divide into lozenges twenty-five to the ounce.

In place of paregoric elixir a mixture of camphor ʒj., menthol ʒj., in spt. chloroformi ʒij. may be used with advantage.

Trochisci Santonini, Ph.Neder.

(*Worm-lozenges*)

Santonin, finely powdered	ʒij.
Powdered sugar	ʒxj.
Cocoa-paste	ʒxiij.

Mix, mass, and divide into 100 lozenges.

Trojanka

Gentian-root	ʒss.
Orange-peel	ʒss.
Cinchona	ʒss.
Sarsaparilla	ʒss.
Galangal	ʒss.
Senna-leaves	ʒss.
Red-clover flowers	ʒij.
Nutmeg	ʒj.
Cardamoms	ʒj.
Cinnamon	ʒj.
Aniseed	ʒj.

These ingredients are to be macerated for a week in a winebottleful of sherry or whisky and water in order to furnish the bitters beloved of Russians and Poles.

Dose: One to two tablespoonfuls.

Ung. Acidi Carbolici

(A. McMillan)

Carbolic acid	5 parts
Soft paraffin	65 parts
White wax	5 parts
Water to	100 parts

Ung. Althææ, P.L. 1746

Oil of mucilages	lb. ij.
Beeswax	lb. ss.
Resin	ʒiij.
Venice turpentine	ʒss.

Mix with heat.

For oil of mucilages *see* p. 731.

Ung. Amidoazotoluolis

Scarlet-red Ointment

Scarlet red	ʒij.
Castor oil	ʒiiss.
Paraffin ointment	ʒiiss.

For ulcers the ointment is spread on gauze, and the skin around the ulcer is covered (before the dressing is applied) with zinc ointment to avoid irritation. The dressing should not remain on longer than twenty-four hours, the wound then being carefully cleaned before a fresh application. Should irritation occur, a dressing of boric-acid ointment should be substituted for one or two days, after which a weaker ointment of scarlet red may be applied.

Ung. Bismuth. et Resorcini Co.

(*Glasgow Formulary*)

Resorcin	350 gr.
Distilled water	350 gr.
Bismuth subnitrate	350 gr.
Zinc oxide	350 gr.
Oil of birch tar (by weight)	175 gr.
Wool-fat	3 oz. 88 gr.
Soft paraffin (white)	10 oz.

Dissolve the resorcin in the distilled water, and mix the solution with the bismuth subnitrate and zinc oxide, so as to form a thin cream; then mix the oil of birch tar with the white soft paraffin and wool-fat, and gradually incorporate the cream.

Note.—When a stiffer ointment is required add powdered starch.

Boil-ointment

Emplast. galbani	ʒj.
Acidi borici	ʒss.
Acidi carbolici	ʒss.
Ext. belladon. alcohol.	ʒss.
Camphoræ	ʒj.
Paraffini mollis	ʒiij.

Ung. Capsici (Gerrard)

I

Ext. capsici liq.	ʒj.
Cetacei	ʒj.
Ol. olivæ	ʒj.

Melt the spermaceti in the oil by heat, stir in the extract, and allow to cool.

II

Ext. capsici liq.	ʒj.
Adipis lanæ hydros.	ʒix.

Melt the lanoline with a gentle heat and stir in the extract.

Unguentum Caseini

(Unna)

Dried casein	ʒj.
Alkali (potassium hydrate 4, sodium hydrate 1)	gr. ij.
Glycerine	ʒss.
Vaseline	ʒiss.
Antiseptic	gr. iv.
Water	ʒv.

Chilblain-ointment

19

Potassii iodidi	ʒss.
Tannini	ʒss.
Adipis benzoat.	ʒxij.
Pulv. tragacanth.	ʒij.
Liq. cocci	ʒij.
Aquæ	ʒiv.

20

Calaminæ	ʒvj.
Ceræ flavæ	ʒvj.
Ol. olivæ	ʒxvj. (pond.)
Camphor.	ʒij.

21 (*Dr. Gardiner's*)

Ammoniated mercury	gr. x.
Ichthyol	gr. x.
Powdered starch	ʒij.
Powdered zinc oxide	ʒij.
Vaseline	ʒss.

To be spread on linen and changed frequently.

Cooling and Healing Ointment

Vaselini	ʒij.
Ung. zinci	ʒj.
Ung. resinæ	ʒiv.
Lanolini	ʒj.
Ung. acidi borici	ʒj.

Ung. Conii

(A. McMillan)

Conium-juice	160 parts
(Evaporated to 20 parts)	
Soft paraffin	65 parts
Wool-fat	15 parts

Corn-ointment

Acidi salicylici	ʒvj.
Ung. resinæ	ʒvj.

Corn-salve

Acidi salicylici	ʒj.
Sebi præparat.	ʒj.
Adipis	ʒij.

M.S.A.

Apply each night for four nights, then bathe the foot in hot water, when the corn may be easily picked out.

Unguentum Durum Album

(R. Tocher)

White beeswax and hydrous wool-fat, equal parts.

Unguentum Durum Flavum

(R. Tocher)

Yellow beeswax and anhydrous wool-fat, equal parts.

Eczema-ointment

24

Hydrarg. ammon. chlor.	ʒss.
Plumbi acetat.	ʒss.
Zinci oxidi	ʒj.
Ung. hyd. nit. fort.	ʒj.
Lanolini	ʒss.
Vaselini	ʒss.
Ol. cadini	ʒss.
Hydrarg. sulph. rub.	q.s.

73

Ung. zinci	ʒxvj.
Ung. hydrarg. oxid. rub.	ʒxvj.
Liq. carbonis deterg.	ʒiv.

74

Hydrarg. ammon. chlor.	ʒiv.
Liq. carb. deterg.	ʒss.
Vaselini flav.	ʒxiv.
Lanolini	ʒij.

80

Bismuthi subnitratis	ʒj.
Zinci oxidi	ʒj.
Acidi carbolici puri	mxxiv.
Glycerini	ʒiss.
Vaselini	ʒj.

113

Ung. hydrargyri nit. dil.	ʒij.
Ung. zinci oxidi	ʒiv.
Ol. amygdalæ dulc.	ʒij.
Lanolini	℥iss.

129

Zinci oxidi	ʒij.
Acidi borici	ʒij.
Olei olivæ	ʒvj.
Aquæ calcis	ʒvj.
Adipis lanæ anhyd.	ʒj.
Tr. benzoini	ʒiv.
Ceræ albæ	ʒij.
Acidi carbolici	ʒj.

130

Resorcin.	℥ss. ℈ij.
Aquæ	℥ss. ♏xl.
Bismuth. subnit.	℥ss. ℈ij.
Zinci oxid.	℥ss. ℈ij.
Calamin. præp.	ʒij.
Ol. rusci	♏cxl.
Lanolini	ʒxix.
Paraf. moll. ad	℥viij.

Hair-growing Ointment for Cattle

Powdered cantharides	ʒj.
Prepared lard	℥iiss.

Apply daily with friction.

Hay-fever Ointment

Cocainæ	gr. v.
Menthol.	gr. v.
Vaselin. alb. ad	℈x.

Healing-ointment

Calamin.	℥ij.
Pulv. acid. boric.	℥ij.
Pulv. zinci oxid.	℥ij.
Acid. carbol. liq.	ʒiij.
Ceræ flavæ	ʒiv.
Ol. olivæ	lb. j. ʒiv.

Unguentum Ichthamolis Co.

(*Glasgow Formulary*)

Resorcin	175 gr.
Water	262 min.
Salicylic acid	87½ gr.
Beta-naphthol	87½ gr.
Ichthamol [ichthyol]	394 gr.
Precipitated sulphur	394 gr.
Oxide of zinc	394 gr.
Starch powder	394 gr.
Anhydrous lanoline ointment	10 oz.

M x.

Ung. Lanæ Anhydrosum (Tocher)

Anhydrous wool-fat and yellow soft paraffin, equal parts of each.

Ung. Lanæ Hydrosum (Tocher)

Hydrous wool-fat and white soft paraffin, equal parts of each.

Ung. Methyl. Salicylat.

(*Glasgow Formulary*)

Methyl. salicylatis	℥v.
Ung. dur. alb.	℥v.

Ung. Methyl. Salicylat. Co.

(*Glasgow Formulary*)

Methyl. salicylat.	℥v.
Menthol.	ʒj.
Eucalyptol.	ʒij.
Ol. cajuputi	ʒij.
Ung. durum album ad	℥x.

Pagenstecher's Ointment

Dr. W. Harrison Martindale's process for obtaining the yellow mercuric oxide in impalpable powder is as follows:—

Supposing we wish to manufacture 10 lbs. of ointment of 10 per cent. strength. Now, 214·68 parts of HgO are produced from 269·18 of $HgCl_2$, therefore $\frac{269{\cdot}18}{214{\cdot}68} = 1{\cdot}254$ lb. of corrosive sublimate will produce 1 lb. of yellow mercuric oxide on precipitation, as directed, with sodium hydroxide. This is carefully washed and pressed in suitable linen free from 'fluff,' and finally in this moist condition is made up to 10 lbs. with paraffinum molle. The amount of moisture

in the precipitate is easily ascertained, and is reducible, by pressing, to a very small amount. Weaker strengths can then be prepared from this 10-per-cent. bulk, as desired, by dilution with paraffinum molle. If kept exposed to light, yellow ointment may on long exposure turn dark on the surface. If desired, the ointment may be kept under water, or be placed in small collapsible tubes. The contents of such tubes examined two years after preparation were in good condition. The ointment is usually manufactured in strengths of yellow oxide as follows: 1·25, 2·5, 4, 5, 8, and 10 per cent.

Compare with the remarks under Ung. Hydrarg. Oxid. Flav. on p. 813. The 'Glasgow Formulary' adopts Martindale's process for *Ung. Ophthalmic. Flav.*

Unguentum Paraffini

(W. Swan)

Wool-fat	℥ij.
Hard paraffin	℥ij.
Soft paraffin	℥vj.

Melt together in a shallow dish, and as the liquid cools triturate constantly until, when cold, a uniform plastic ointment is produced.

Ung. Petrolei Co.

(St. John's Hospital)

Hydrarg. ammoniat.	gr. x.
Liq. picis carbonis	ʒss.
Paraffin. molle ad	ʒj.

Pile-ointment

20

Bismuthi subnitrat.	℥ss.
Lanolini	℥iss.
Vaselini	℥iiss.
Acid. carbolic. liq.	ʒj.
Ext. hamamelidis	℥ij.

77

Ung. picis liquidi	ʒij.
Ext. hamamel. liq. dest.	ʒij.
Pulv. gallæ	ʒj.
Pulv. acidi borici	ʒj.
Pulv. zinci oxidi	ʒj.
Paraffini mollis	ʒix.
Adipis	ʒj.

82

Ung. gallæ c. opio.

124

Zinci oxidi	℈viij.
Acidi borici	℈viij.
Lin. camphoræ	ʒij.
Liq. hamamelidis dest.	ʒj.
Lanolini	ʒiv.

125

Hydrarg. subchlor.	gr. XL.
Ext. hamamel. liq.	♏XL.
Lanolini	ʒiij.
Paraf. molle ad	ʒj.

126. *Ung. Ranunculi Ficariæ*

Melt 10 oz. of lard and digest 3 oz. of fresh pilewort in it until crisp. Strain.

Suppositories are made each containing 72 gr. of this ointment and 18 gr. of spermaceti.

Ung. Resorcin. et Bismuthi Co.

(*Glasgow Formulary*)

Resorcin.	gr. 350
Aquæ	♏350
Pulv. amyli	ʒj.
Zinc. oxidi	gr. 350
Bismuth. oxychloridi	gr. 350
Ol. cadini	♏109
Ol. rusci	♏109
Ung. lanæ anhyd. ad	ʒx.

Salicylic acid 2 per cent. may be added when required.

Ung. Resorcin. Co.

Resorcin Compound Ointment

Resorcin	6 parts
Zinc oxide	6 parts
Bismuth subnitrate	6 parts
Oil of cade	12 parts
White wax	10 parts
White soft paraffin	25 parts
Hydrous wool-fat	17½ parts
Anhydrous wool-fat	17½ parts
Water	4 parts

Mix the zinc oxide and the bismuth subnitrate to a smooth paste with part of the soft paraffin, then incorporate the rest of the soft

paraffin previously melted with the white wax. Dissolve the resorcin in the water, and incorporate with the mixed wool-fats, add the paraffin mixture and the oil of cade. (This is a modification of the 'National Formulary' recipe. It darkens after being made, but this can be obviated by adding 12 parts of powdered starch.)

Ringworm-ointment

3

Cupri oleatis	ʒj.
Paraffini mollis	ʒvij.

Prepared lard may be used instead of soft paraffin if preferred.

4. No. 20

Creosoti	♏lxxx.
Ung. hydrarg. nitrat.	ʒj.
Paraff. mollis flav.	ʒiv.

Ung. Sacchari Co.

(Dr. Hodara)

	I	II
Lanoline	20	30
Vaseline	20	30
Sugar	10	20
Zinc oxide	10	—
Glycerine	10	10
Sulphur	10	10
Chrysarobin	—	1 to 2

These ointments are used for pimples and similar skin-eruptions.

Skin-ointment

7 (For Acne, Eczema, &c.)

Dermatol.	ʒj.
Liq. hamamelidis	ʒj.
Vaselini	ʒvij.
Zinci oxidi	ʒij.

50

Hydrargyri ammoniati	ʒj.
Camphoræ	ʒss.
Acidi borici	ʒij.
Liq. carbonis detergentis	ʒij.
Lanolini	ʒiv.
Paraffini mollis	ʒxvj.

72

Olei rusci veri	ʒj.
Zinci oxidi	ʒij.
Adipis lanæ	ʒj.

73

Ichthyol. ammon.	ʒj.
Pulv. acid. boric.	℈iv.
Pulv. amyli	ʒj.
Zinci oxidi	ʒj.
Paraffin. mollis	ʒij.

Green Skin-ointment

Eucalyptus oil	ʒij.
Resin	ʒiv.
Hard paraffin	ʒij.
Soft paraffin	ʒxij.
Chlorophyll	a sufficiency

Melt the resin and the paraffins, add the chlorophyll, and when nearly cold stir in the eucalyptus oil.

Skin-cure Ointment

Ung. hydrarg. ammoniat.	ʒvj.
Adipis lanæ hydros.	ʒx.
Aquæ	ʒiiss.
Liq. picis carbonis	ʒj.
Liq. plumbi subacet.	ʒivss.
Vaselini	ʒivss.

Ung. Sulphuris Camph.

(St. Mary's Hospital Pharm.)

Sulphuris præcipitati	gr. x.
Acidi carbolici	gr. xv.
Resorcini	gr. xv.
Camphoræ	gr. xv.
Liquoris picis carbonis	♏xxv.
Adipis benzoati	ʒss.
Paraffini mollis albi	ʒss.

Ung. Sulphuris Phenolatum

(Dr. Payne)

Sulphur. præcipitat.	ʒj.
Acidi carbolici	ʒj.
Ol. lavandulæ	♏x.
Vaselini	ʒiv.

Turnbull's Ointment

I

Ext. aconiti	ʒss.
Adipis	ʒij.

II. (An ammoniated variety)

Ext. aconiti	ʒss.
Adipis	ʒiij.
Liq. amm. fort.	ɱxv.

III. *Ung. Rubefaciens* (Turnbull)

Pulv. ipecac.	ʒij.
Ol. olivæ	ʒij.
Adipis	ʒiv.

No. 30 Ointment

Zinci oxidi	ʒiss.
Paraff. moll. flav.	ʒviiiss.
Ung. hydrarg. ammon.	ʒx.
Liq. picis carb.	ʒxiij.

No. 70 Ointment, or Rheumatic Balm

Methyl. salicyl.	ʒiiss.
Menthol.	ʒss.
Eucalyptol.	ʒss.
Ol. cajuputi	ʒss.
Adipis lanæ	ʒv.
Ung. paraffin. alb.	ʒxj.

Wart-ointment for Cattle

Arsenic	gr. vj.
Prepared lard	ʒj.

Apply to the part night and morning.

Varnish for Electric-light Lamps

White shellac	ʒiij.
Powdered resin	ʒj.
Benzoin	ʒj.
Spirit	ʒx.

Dissolve, and add sufficient of an appropriate aniline dye dissolved in spirit.

Varnish for Fixing Pencil Drawings

Shellac	4 parts
Sandarac	2 parts
Rectified spirit	94 parts

To be sprayed on the picture with an atomiser.

Vigora, the Children's Tonic

Syr. ferri phos. co. alb.	ʒiij.
Ext. byni liq.	ʒiij.

Dose: One to two teaspoonfuls, according to age.

Pickling-vinegar

Acid. acetic., B.P.	ʒj.
Aquæ	ʒv.
Sacchari usti	q.s.

Vinum Aromaticum, U.S.P. '80

Lavender, origanum, peppermint, rosemary, sage, and wormwood, of each	ʒj.
Sherry	Ov.

Percolate the solids (No. 20 powder) with the wine until 100 oz. is obtained.

Resembles the Continental aromatic wine.

Base or Raisin Wine

Dried Valencia raisins	70 lbs.
Demerara sugar	110 lbs.
Honey	1 lb.
Cream of tartar (98 p.c.)	12 oz.
Boiling water to make	58 gals.

Bruise the raisins thoroughly, place in a tub and cover over with 10 gals. of boiling water; thoroughly stir it, and after four hours pass the liquor through a sieve and put into a clean cask, returning into the tub the raisins from the sieve. Now dissolve the cream of tartar separately in a little hot water and add to the liquor in the cask. Then treat the honey in like manner, and lastly the sugar. Now make the liquor in the cask up to 58 gals. by repeating the operation first described—*i.e.*, by pouring 10 gals. of boiling water at a time over the raisins, letting it stand three hours on them before straining, in order thoroughly to exhaust fruit. As soon as the cask is full, well stir it all up and put a piece of canvas over the bung-hole. In a few days, according to temperature, a lighted match will not burn in the bung-hole; then bung it down securely and bore a hole $\frac{3}{8}$ to $\frac{5}{8}$ inch beside it, and into this hole drive

a small tube, affixing to it a length of indiarubber tubing, the other end of which should be placed in the bottom of a vessel of water 15 or 16 in. deep; or, if wanted for carbonating, the gas can be collected and passed through purifier into gasometer. When the gas ceases to bubble in the water, fermentation has ceased, and the wine should be racked off into a clean cask and fined down.

Orange-wine.—Add 7 lbs. of dried orange-peel to the raisins and other ingredients used for making the base wine before adding the boiling water.

Elderberry-wine.—Add 26 pints of elderberry-juice to the raisins, &c., used in the base wine before adding the boiling water.

Ginger-wine.—Add 6 lbs. of crushed Jamaica ginger and the rind (pared very thinly) of fifteen lemons to the raisins, &c., used in the base wine before adding the boiling water.

NOTE.—A licence is necessary for the manufacture of these wines in the United Kingdom. This also applies to Ginger and Orange Wines in the next column.

Cinchona-wine

(Swiss Pharmacopœia)

Liquid extract of cinchona (6-per-cent. alkaloid)	30
Dilute alcohol	20
Cow's milk	40
Malaga wine	910
Citric acid	1

Mix the wine, liquid extract of cinchona, dilute alcohol, and milk, and allow to stand in a cool place for eight hours; then filter at a low temperature and add the citric acid. Store in a cool place, and filter a second time if necessary.

Coca-wine

Liquid extract of coca	℥vij.
White gelatin	℥ss.
Water	℥iiss.
Marsala wine	Ovj.

Dissolve the gelatin in the water by the aid of heat. Mix the warm solution with the wine, and add the liquid extract. After standing for several days filter.

Ginger-wine

Crushed Jamaica ginger	3 lbs.
Sugar	30 lbs.
Lemons	1 doz.
Chopped muscatel raisins	7 lbs.

Boil the ginger in 2 gals. of water for half an hour, then pour it over raisins, peel, and sugar, and add, when nearly cold, the lemon-juice, strain, and put into cask. Now put two lots of boiling water, 3 gals. each, over the ginger, raisins, peel, &c., strain, and put into cask. Proceed as for base wine.

Orange-wine

Seville oranges	21 lbs.
Sugar	32 lbs.

Put the sugar into a 9-gal. cask and place beside it two pans, into one of which put the pulp after squeezing the juice into the cask, carefully straining it, and in the other the peel, pared thin. Pour 12 pints of water at a time over each of the pans containing pulp and peel, and strain the liquor into the cask, and continue to do so until the cask is full. Proceed as for base wine.

Phosphatic Iodotannic Wine

Iodine	℥ss.
Tannin	℥ss.
Alcohol	℥vij.
Monocalcium phosphate	℥v.
Simple syrup	℥iiss.
Malaga wine	℥xxvij.

Dissolve the iodine and the tannin

in the alcohol and mix with the wine, in which has previously been dissolved the calcium phosphate; add the syrup, and mix. Let the mixture rest for three days, and filter.

Quinine-wine

(*Non-alcoholic*)

Prepare a non-alcoholic orange-wine from the following formula:—

Soluble essence of orange	ʒiss.
Essence of cognac	ʒij.
Essence of vanilla	ʒij.
Tartaric acid	ʒj.
Salicylic acid	gr. xlviij.
Caramel	a sufficiency
Syrup	Oiv.
Water	Oiv.

In this dissolve quinine hydrochloride in the proportion ordered in the British Pharmacopœia.

Clarifying Wines

Isinglass is most generally used as a clarifying-medium for white wine; it forms a very voluminous precipitate with the tannin and other wine ingredients. Five grains suffices for a gallon of wine. Only those wines which are rich in tannin can be clarified with gelatin; in others it does not separate. It has a considerable decolorising effect and forms a heavy precipitate. In France the white of fresh eggs is mostly used to clarify red wine. The white of two to four eggs, strained through linen, is sufficient for one hectolitre. Spanish earth (a decomposition-product of felspar) is specially suitable for thick and slimy wine, as well as for Southern wines, which contain a large amount of sugar; of the earth 2 to 5 dr. to a gallon of wine is required.

Wart-pencil

99

Argenti nitratis	ʒj.
Potassii nitratis	ʒxij.

100

Argenti nitratis	ʒj.
Potassii nitratis	ʒv.
Potassii chromatis	ʒj.

Modelling-wax

	I	II
Japan wax	2¼ oz.	2¼ oz.
Sublimed sulphur	1 oz.	1 oz.
Madras wax	1 oz.	1 oz.
Tallow	½ oz.	½ oz.
Canada balsam	¼ oz.	—
Resin	—	1 oz.

Poisoning Wheat

The following method has proved successful for sparrows, mice, rabbits, and cockatoos. Strychnine, 1½ oz., is put into a pickle-bottle three-parts full of water. An ounce and a half of tartaric acid is added and stirred for five minutes. One pound of flour and 3 lbs. of dark sugar are stirred in 2 gals. of water and heated to boiling; then add the solution of strychnine and acid, stir five minutes, pour 100 lbs. of wheat into the liquid, and thoroughly mix. Spread out for twenty-four hours to dry. [To expose such wheat in the United Kingdom is illegal.]

Window-steaming Preventives

I

Yellow soap	4 oz.
Crude glycerine	2 oz.
Hot water	12 oz.

Cut the soap into small pieces, pour on it the water (boiling), and after a time stir till a creamy paste results; finally adding the glycerine and a little oil of citronella if desired.

II

A 4-oz. packet of Hudson's dry soap, oil of wintergreen mv., and eosin gr. ss. dissolved in spirit ʒss.

The secret of many powders sold

for preventing windows steaming is the soap they contain ; the thin film of soap left behind prevents, for a time, deposition of moisture.

Frost on Shop-windows

The pastes and liquids which are used for preventing ice from forming on shop-windows owe their virtues to the glycerine they contain. They are only partly successful.

Capsicum Wool

(Gerrard)

Liquid extract of capsicum	ʒij.
Absorbent cotton, in thin sheets	ʒix.
Alcohol (90-per-cent.) .	ʒvij.

Dissolve the extract in the alcohol, and pour the solution on to the cotton, under pressure, in such a manner that the cotton becomes evenly saturated with the whole of the fluid. Dry the cotton, and preserve it in well-closed cartons.

Contains 10 per cent. of solid extract of capsicum. When freshly made it is of a pale orange colour ; age bleaches it without loss of strength. To keep its colour uniform, it is advisable to dye it lightly with eosin.

Toothache-wool

Cotton-wool impregnated with 10 per cent. of carvacrol and essential oils.

Other toothache remedies may be similarly used—*e.g.*, phenol—dissolving them in spirit with 2 per cent. of glycerine to fix when the spirit has evaporated.

CANADIAN FORMULARY PREPARATIONS

THE 'Canadian Formulary of Unofficial Preparations is published by the Ontario College of Pharmacy, Toronto (50 c.), and is approved and adopted by the Canadian Pharmaceutical Association. The third edition is dated March 1910, and the following formulas are those which were not published in the first edition, or which have been altered. 'Diluted alcohol' in the formulas refers to a mixture of equal volumes of 95-per-cent. alcohol (64 o.p.) and distilled water.

Elixir Acetanilidi Comp.

Acetanilide	400 gr.
Phenacetin	320 gr.
Sodium bromide	3 oz. 288 gr.
Caffeine citrate	160 gr.
Tartaric acid	80 gr.
Sodium bicarbonate	1 oz. 32 gr.
Aromatic elixir to	40 fl. oz.

Mix the acetanilide, phenacetin, tartaric acid, and sodium bicarbonate, and dissolve in 20 fl. oz. of aromatic elixir. To this solution add the sodium bromide and caffeine citrate; then add sufficient aromatic elixir to make 40 fl. oz., and filter if necessary.

Elixir Quinque Bromidorum

Potassium bromide	1,600 gr.
Sodium bromide	1,600 gr.
Ammonium bromide	960 gr.
Calcium bromide	480 gr.
Lithium bromide	160 gr.
Tincture of cannabis indica	2 fl. oz.
Aromatic elixir to	40 fl. oz.

Dissolve the bromides in the aromatic elixir, add the tincture of cannabis indica, and filter if necessary.

Elixir Buchu et Hyoscyami Comp.

Fluid extract buchu	3 fl. oz.
Fluid extract uva ursi	1½ fl. oz.
Fluid extract pareira	1½ fl. oz.
Fluid extract hyoscyamus	1½ fl. oz.
Fluid extract hops	1½ fl. oz.
Potassium acetate	2 oz. 291 gr.
Spirit of nitrous ether	4½ fl. oz.
Aromatic elixir to	40 fl. oz.

Mix and set aside for two days. Filter if necessary.

Elixir Digitalini Comp.

Digitalin (amorphous)	1½ gr.
Solution of strychnine, B.P.	6 fl. dr.
Solution of trinitrin	3 fl. dr.
Aromatic elixir to	20 fl. oz.

Triturate the amorphous digitalin with a portion of the elixir until a solution results; then add to the remainder of the aromatic elixir the strychnine, trinitrin, and digitalin solutions, in the order mentioned, mixing thoroughly after each addition.

One fluid drachm = $\frac{1}{100}$ gr. each of digitalin and trinitrin and $\frac{1}{50}$ gr. of strychnine hydrochloride.

Only amorphous digitalin should be used, as the crystalline variety is five times as strong as the amorphous.

Elixir Euphorbiæ Comp.
(*Anti-asthmatic Elixir*)

Sodium iodide	640 gr.
Sodium bromide	640 gr.
Fluid extract of euphorbia	2 fl. oz.
Tincture of lobelia	1¼ fl. oz.
Solution of trinitrin, B.P.	3 fl. dr.
Aromatic elixir to	40 fl. oz.

Dissolve the sodium iodide and bromide in 20 fl. oz. of aromatic elixir, add the remaining ingredients, and, lastly, sufficient aromatic elixir to make 40 fl. oz. Filter if necessary.

Elixir Ferri Pyrophosphatis cum Quinina et Strychnina

Quinine sulphate	160 gr.
Sodium citrate	150 gr.
Solution of strychnine (B.P.)	500 min.
Iron pyrophosphate, soluble	600 gr.
Alcohol (95-per-cent.)	5 fl. oz.
Glycerine	6 fl. oz.
Distilled water	2 fl. oz.
Simple elixir to	40 fl. oz.

Dissolve the quinine in the alcohol and 6 fl. oz. of simple elixir, using gentle heat if necessary, and add the solution of strychnine. Dissolve the pyrophosphate of iron in the water previously warmed, and 2 fl. oz. of simple elixir, and add it to the solution of quinine and strychnine. Dissolve the sodium citrate in the glycerine, mix the solutions, and add sufficient simple elixir to make 40 fl. oz.

Elixir Formini

(*Elixir Hexamethylene-tetramine*)

Formin	600 gr.
Tincture of cudbear	5 fl. dr.
Aromatic elixir to	40 fl. oz.

Dissolve the formin in the elixir, add the tincture of cudbear, and filter if necessary.

Elixir Glycerophosphatum Comp.

Calcium glycerophosphate	160 gr.
*Sodium glycerophosphate	212 gr.
Iron glycerophosphate (scale)	80 gr.
*Potassium glycerophosphate	106 gr.
Citric acid	76 gr.
Tincture of sweet-orange peel	50 fl. dr.
Sodium chloride	120 gr.
Gluside	4 gr.
Glycerine	6 fl. oz.
Sherry wine	10 fl. oz.
Distilled water to	40 fl. oz.

Dissolve the glycerophosphates and citric acid in 12 fl. oz. of warm water, add the glycerine, and when cool add the tincture of orange in which the gluside has been previously dissolved, then the sherry wine, and sufficient water to make 40 fl. oz. Filter through paper sprinkled with talcum, returning the filtrate until it passes perfectly clear.

Dose: 2 fl. dr.

Elixir Glycyrrhizæ, N.F.

Fluid extract of liquorice	5 fl. oz
Aromatic elixir	35 fl. oz.

Filter if necessary.

Elixir Glycerophosphatum cum Quinina et Strychnina

Calcium glycerophosphate	240 gr.
*Sodium glycerophosphate (75-per-cent.)	212 gr.
*Potassium glycerophosphate (75 per-cent.)	212 gr.
Magnesium glycerophosphate	160 gr.
Iron glycerophosphate (scale)	80 gr.
Quinine hydrochloride	20 gr.
Strychnine	4 gr.
Citric acid	60 gr.
Gluside	22 gr.
Tincture of sweet-orange peel	2 fl. oz.
Alcohol (95-per-cent.)	2 fl. oz.
Glycerine	10 fl. oz.
Distilled water to	40 fl. oz.

Dissolve the glycerophosphates of quinine and strychnine and the citric acid in 20 fl. oz. of warm water mixed with the glycerine, and when cold add the tincture of orange-peel and alcohol, in which the gluside has been previously

* Inasmuch as some glycerophosphates of commerce have varied strengths, the quantity given above will have to be regulated according to the strength of the glycerophosphate used.

dissolved. Filter through paper sprinkled with talcum, and pass sufficient distilled water through the filter to make 40 fl. oz.

Each fluid drachm contains strychnine hydrochloride $\frac{1}{80}$ gr.

Dose: 1 to 2 fl. dr.

Elixir Lithii et Hydrangeæ

Lithium salicylate	600 gr.
Lithium benzoate	300 gr.
Fluid extract of hydrangea	7½ fl. oz.
Alcohol	7½ fl. oz.
Aromatic elixir to	40 fl. oz.

Dissolve the lithium salts in 25 fl. oz. aromatic elixir, add the alcohol to the fluid extract of hydrangea, and mix all together. Let the mixture stand for twenty-four hours, and filter if necessary.

Elixir Papaini

Papain	640 gr.
Diluted hydrochloric acid	150 min.
Distilled water	6 fl. oz.
Glycerine	6 fl. oz.
Sherry wine	6 fl. oz.
Gluside	20 gr.
Aromatic elixir to	40 fl. oz.

Macerate the papain in the acid and water for four days, with occasional agitation. Dissolve the gluside in the wine and elixir, add the glycerine, mix with papain-mixture, and filter; then add aromatic elixir sufficient to make 40 fl. oz.

Elixir Pepsini, Bismuthi, et Strychninæ

Solution of strychnine (B.P.)	176 min.
Elixir of pepsin and bismuth sufficient to make	20 fl. oz.

Mix them, and if the elixir shows an acid reaction to blue litmus, add solution of ammonia cautiously until the reaction is neutral.

Note.—Each fluidrachm contains $\frac{1}{100}$ grain strychnine hydrochloride.

Elixir Pepsini cum Bismutho Compositum

(*Elixir of Lactated Pepsin with Bismuth*)

Pepsin (1 in 3,000)	175 gr.
Pancreatin	17½ gr.
Diastase	17½ gr.
Glycerine of bismuth	5 fl. oz.
Lactic acid	15 min.
Hydrochloric acid	20 min.
Glycerine	2 fl. oz.
Distilled water	5 fl. oz.
Tincture of cudbear	2 fl. oz.
Purified talcum	1 fl. oz.
Aromatic elixir to	40 fl. oz.

Mix the acids with the glycerine and water, add the pepsin, pancreatin, and diastase to the mixture, and macerate with frequent agitation until solution is apparently effected. Then add the glycerine of bismuth and tincture of cudbear and sufficient aromatic elixir to make 40 fl. oz. Thoroughly incorporate the purified talcum, and filter.

Elixir Pepsini cum Quinina et Ferro et Strychnina

(*Elixir of Lactated Pepsin, with Quinine, Iron, and Strychnine*)

Pepsin (1 in 3,000)	175 gr.
Pancreatin	17½ gr.
Diastase	17½ gr.
Quinine	120 gr.
Tincture of citro-chloride of iron	2 fl. oz.
Purified talcum	1 oz.
Solution of strychnine (B.P.)	1 fl. oz.
Lactic acid	15 min.
Hydrochloric acid	20 min.
Glycerine	4 fl. oz.
Distilled water	5 fl. oz.
Gluside	20 gr.
Aromatic elixir to	40 fl. oz.

Mix the acids with the glycerine and water, add the pepsin, pancreatin, and diastase to the mixture, and macerate with frequent agitation until dissolved. Dissolve the

gluside in 1 fl. oz. of distilled water. Dissolve the quinine in the solution of iron, add the solution of strychnine, the glycerine, and 2 fl. oz. of aromatic elixir. Mix all together, and lastly add aromatic elixir sufficient to make 40 fl. oz. Thoroughly incorporate with the purified talcum, and filter.

Each fluid ounce contains 3 gr. of quinine and $\frac{1}{8}$ gr. of strychnine.

Elixir Serenoæ Comp.

Fluid extract saw palmetto	2 fl. oz.
Fluid extract sandalwood	2 fl. oz.
Fluid extract couch-grass	2 fl. oz.
Fluid extract corn-silk	2 fl. oz.
Glycerine	2 fl. oz.
Aromatic elixir to	40 fl. oz.

Mix and let stand for four days, then filter if necessary.

Elixir Sex Iodidorum

Arsenic iodide	2 gr.
Mercuric iodide	2 gr.
Manganese iodide	32 gr.
Sodium iodide	320 gr.
Potassium iodide	320 gr.
Glycerine of ferrous iodide	30 min.
Sodium hypophosphite	a sufficient quantity
Aromatic elixir to	40 fl. oz.

Add the six iodides to the elixir, dissolve by agitation, and add sufficient sodium hypophosphite to decolorise the liquid. Filter.

Elixir Sodii Salicylatis Comp.

Sodium sulphate	10 oz.
Sodium salicylate	800 gr.
Magnesium sulphate	9 oz.
Lithium benzoate	400 gr.
Tincture of nux vomica	2 fl. oz.
Solution of carmine	6 fl. dr.
Simple elixir to	40 fl. oz.

Dissolve the salts in 24 fl. oz. of simple elixir by trituration, add the tincture of nux vomica and solution of carmine and sufficient simple elixir to make 40 fl. oz. Filter if necessary.

Elixir Viburni Compositum

Fluid extract of hydrastis	1½ fl. oz.
Fluid extract of viburnum opulus	3 fl. oz.
Fluid extract of scutellaria	1½ fl. oz.
Fluid extract of mitchella repens	1½ fl. oz.
Aromatic syrup of liquorice	6 fl. oz.
Aromatic elixir to	40 fl. oz.

Mix the fluid extracts, then add the aromatic syrup of liquorice and agitate, then add the aromatic elixir. Filter through paper sprinkled with talcum, if necessary.

Emulsio Iodoformi

Iodoform	10 parts
Glycerine	70 parts
Distilled water	20 parts

Rub the iodoform to a smooth paste with the glycerine, then add the water, and continue stirring until a uniform product results.

Emulsio Olei Morrhuæ cum Ferri Phosphato

Cod-liver oil	20 fl. oz.
Soluble ferric phosphate	240 gr.
Powdered acacia	5 oz.
Syrup of orange	2½ fl. oz.
Syrup of tolu	2½ fl. oz.
Distilled water to	40 fl. oz.

Prepare a primary emulsion of the cod-liver oil with the gum and 10 oz. of water at 90° F., then add the syrups, under constant stirring. Dissolve the soluble ferric phosphate in 3½ fl. oz. of water, and add this, under stirring, to the mixture, and follow with sufficient water to make 40 fl. oz.

One fluid ounce = ferric phosphate 6 gr.

Essentia Limonis

Oil of lemon (fresh)	1 fl. oz.
Lemon-peel (freshly grated)	1 av. oz.
Alcohol	28 fl. oz.
Distilled water	12 fl. oz.
Magnesium carbonate	4 dr.

Mix the oil of lemon and the lemon-peel with the magnesium carbonate. Triturate well, then slowly add the alcohol and distilled water, previously mixed, meanwhile continuing the trituration; macerate for twenty-four hours, then filter and add sufficient of the mixed alcohol and water to make 40 fl. oz.

Essentia Pepsini Phenolata

Phenol (absolute)	25 gr.
Essence of pepsin (p. 615) to	40 fl. oz.

Dissolve the phenol in the essence of pepsin, and filter if necessary.

Ext. Cascaræ Sagradæ Arom. Fluid.

Cascara-bark (in coarse powder)	80 oz.
Liquorice-root (in coarse powder)	10 oz.
Calcined magnesia	12 oz.
Gluside	40 gr.
Sodium bicarbonate	10 gr.
Oil of coriander	15 min.
Oil of aniseed	20 min.
Alcohol (95-per-cent.)	1 oz.
Glycerine	24 oz.
Distilled water (boiling)	100 oz.

Mix the cascara, liquorice, and magnesia thoroughly, and moisten thoroughly with the water, stirring well. Place the mixture in a suitable, well-covered container, and macerate for twenty-four hours, then pack moderately tight in a percolator, and percolate with boiling water until exhausted. Evaporate the percolate over a water-bath (or steam-bath) until it measures 54 fl. oz. Dissolve the gluside in 1 fl. oz. of water with the aid of the sodium bicarbonate. Dissolve the oils in the alcohol, and mix both solutions with the glycerine, then add the concentrated percolate, and shake thoroughly.

Ext. Senegæ Fluid.

(U.S.P. 1905)

Senega (No. 40 powder)	40 oz.
Solution of potassium hydroxide	1¼ fl. oz.
Alcohol (95-per-cent.) and water, of each a sufficiency to make	40 fl. oz.

Mix the solution of potassium hydroxide with 24 fl. oz. of alcohol and 12 fl. oz. of water. Moisten the powder with 18 fl. oz. of the mixture, pack in a percolator, and after forty-eight hours allow percolation to begin, adding more menstruum until 34 fl. oz. of percolate is obtained. Reserve this; continue percolation with the same menstruum, and evaporate this second percolate to a soft extract, which dissolve in the reserved percolate, adding menstruum to make 40 fl. oz.

Extractum Serpylli Liquidum

Wild thyme, in No. 40 powder	20 oz.
Glycerine	3 fl. oz.
Alcohol (95-per-cent.) and water, of each sufficient to make	20 fl. oz.

Follow the instructions given on the following page under Extractum Thymi Liquidum, and continue the percolation process, in the usual manner, to make 20 fl. oz. of liquid extract.

Extractum Thymi Liquidum

Garden thyme, in No. 40 powder	20 oz.
Glycerine	3 fl. oz.
Alcohol (95-per-cent.) and water, of each sufficient to make	20 fl. oz.

Mix the glycerine with 4 fl. oz. of alcohol and 7 fl. oz. of water. Moisten the powder with 9 fl. oz. of the mixture, and set aside in a covered vessel for twelve hours. Then pack the moistened drug firmly in a cylindrical percolator, and add the remainder of the mixture, and follow with a menstruum of alcohol one volume and water two volumes. Continue the percolation process in the usual manner, to make 20 fl. oz. of liquid extract.

Glycerinum Bismuthi

Bismuth and ammonium citrate	11 oz. 308 gr.
Glycerine	10 fl. oz.
Strong solution of ammonia	a sufficiency
Distilled water to	40 fl. oz.

Triturate the bismuth and ammonium citrate with 8 fl. oz. of distilled water and 3 fl. oz. glycerine, and gradually add to it just enough strong solution of ammonia to dissolve the salt and to produce a neutral solution. Then add the remainder of the glycerine, and sufficient distilled water to make 40 fl. oz.

Each fluid drachm contains 16 gr. of bismuth and ammonium citrate.

Glycerinum Ferri Iodidi

Iron (in wire)	2½ oz.
Iodine	6 oz. 405 gr.
Glycerine	10 fl. oz.
Sulphurous acid (B.P.)	125 min.
Distilled water to	20 fl. oz.

Mix the iron and iodine in a flask with 8 fl. oz. of distilled water. Shake the mixture occasionally, checking the reaction if necessary by the affusion of cold water, and when the solution has acquired a greenish colour and has lost the odour of iodine, heat it gently to the boiling-point, and add at once 2 fl. oz. of glycerine and filter the solution into the remainder of the glycerine. Then add the sulphurous acid and sufficient glycerine to make 20 fl. oz., and mix thoroughly.

Note.—Keep in small, well-filled well-corked, colourless glass bottles, in a place accessible to light. One fluid ounce = 220 gr. ferrous iodide. One volume mixed with 4 volumes of simple syrup will furnish a preparation similar to syrup of ferrous iodide (B.P.).

Glycer. Ferri Phosph. cum Quinina et Strychnina

Iron wire	750 gr.
Concentrated phosphoric acid (B.P.)	15 fl. oz.
Strychnine	50 gr.
Quinine sulphate	1,300 gr.
Glycerine	24 fl. oz.
Distilled water to	40 fl. oz.

Place the iron wire and the phosphoric acid (previously diluted with 4 fl. oz. of distilled water) in a flask, plug the neck with cotton-wool, and heat gently till the iron is dissolved; in the resulting solution dissolve the quinine and strychnine, filter into the glycerine, and pass sufficient distilled water through the filter to make 40 fl. oz.

Note.—One volume of this glycerine mixed with 4 volumes of simple syrup will furnish a preparation similar to syrup triple phosphates (syr. ferri phos. c. quin. et strych., B.P.).

Glycerinum Heroini Comp.

Heroin hydrochloride	20 gr.
Ammonium hypophosphite	640 gr.
Fluid extract of hyoscyamus	320 min.
Fluid extract of white pine	2⅔ fl. oz.
Soluble tincture of tolu	2 fl. oz.
Syrup of wild-cherry bark	12 fl. oz.
Glycerine to	40 fl. oz.

Dissolve the heroin hydrochloride and the ammonium hypophosphite in the tincture, syrup, and 10 fl. oz. of glycerine. Add the fluid extracts and sufficient glycerine to make 40 fl. oz.

Linimentum Mentholis

Menthol	2 oz.
Chloroform	8 fl. oz.
Olive oil to	40 fl. oz.

Mix and agitate until the menthol is dissolved.

Liquor Ammonii Valerianatis

Valerianic acid	3 parts
Ammonium carbonate	a sufficiency
Alcoholic extract of valerian	2 parts
Distilled water to	100 parts

Add the acid to the water, and neutralise carefully with ammonium carbonate, add the extract of valerian, and let it stand for twenty-four hours, then filter.

Dose: 10 to 30 drops in sweetened water.

Liquor Cresolis

Cresylic acid (cresol)	25 fl. oz.
Resin	5 oz.
Potassium hydroxide	350 gr.
Distilled water to	40 fl. oz.

Dissolve the resin in the cresylic acid with the aid of heat. Make a solution of the potassium hydrate by dissolving in 2 fl. oz. of distilled water. Mix the two solutions, and heat until saponification takes place. Set aside to cool, and make up to 40 fl. oz. with water.

Liq. Hypophosphitum Co. sine Saccharo

Potassium hypophosphite	320 gr.
Calcium hypophosphite	320 gr.
Sodium hypophosphite	80 gr.
Iron hypophosphite	160 gr.
Manganese hypophosphite	80 gr.
Potassium citrate	300 gr.
Citric acid	100 gr.
Quinine (alkaloid)	80 gr.
Strychnine (alkaloid)	2¼ gr.
Hypophosphorous acid (10-per-cent.)	a sufficiency
Oil of sweet orange	12 min.
Alcohol	10 fl. dr.
Gluside	25 gr.
Glycerine	20 fl. oz.
Distilled water to	80 fl. oz.

Dissolve the hypophosphites of potassium, calcium, and sodium in 28 fl. oz. of boiling distilled water. Dissolve the hypophosphites of iron and manganese, the citrate of potassium, and citric acid in 8 fl. oz. of water with a gentle heat. Dissolve the alkaloids in a little water with a sufficient quantity of hypophosphorous acid. Mix these solutions, and add the glycerine. Dissolve the gluside and the oil of orange in the alcohol with gentle heat, and mix with the foregoing solution, then add sufficient distilled water to make 80 fl. oz.

Liquor Opii Sedativus

Sedative Liquid

Extract of opium	2 oz. 405 gr.
Alcohol	6¼ fl. oz.
Water to	40 fl. oz.

Dissolve the extract of opium in 16 fl. oz. of boiling water. Cool the solution, add the alcohol and cold water, filter, and add sufficient water to make 40 fl. oz.

Each fluid drachm represents 4 gr. of extract of opium.

Liquor Saponis Antisepticus

Oleic acid	14 fl. oz.
Potassium hydroxide in solution (1 in 1)	a sufficiency
Alcohol	6 fl. oz.
Oil of lavender	40 min.
Ether to	40 fl. oz.

Mix the oleic acid and alcohol, and neutralise with the solution of potassium hydroxide, using phenolphthalein solution as an indicator. Cool and add the oil of lavender, then add sufficient ether to make 40 fl. oz.

Liquor Santali Flavi Compositus

No. 1., p. 683, but with oil of copaiba instead of copaiba.

Liquor Zingiberis

Soluble Essence of Ginger

Strong tincture of ginger (1 in 2)	10 fl. oz.
Purified talcum	6¾ oz.
White sugar	6¾ oz.
Distilled water to	20 fl. oz.

Triturate the tincture of ginger with the sugar and purified talcum, add the distilled water, shake, and filter, returning the first portions of filtrate to the filter until a clear liquid is obtained.

Lotio Sulphuris Composita

Compound Sulphur Lotion

Zinc sulphate	600 gr.
Sulphurated potash	600 gr.
Precipitated sulphur	600 gr.
Glycerine	10 fl. dr.
Distilled water	20 fl. oz.
Rose-water to	40 fl. oz.

Dissolve the zinc sulphate in 10 fl. oz. of distilled water, and filter. Dissolve the sulphurated potash in 10 fl. oz. of distilled water, and filter. Mix the two solutions by slowly pouring the solution of zinc sulphate into the solution of sulphurated potash. Triturate the sulphur with the glycerine, then gradually add under constant trituration the foregoing solution and sufficient rose-water to make 40 fl. oz.

Magma Magnesiæ

(N.F. 1906)

Magnesium sulphate	10 oz.
Sodium hydroxide	3 oz.
Distilled water to	40 fl. oz.

Dissolve the sulphate in 160 fl. oz. of water and the hydroxide in another 160 fl. oz. of water; filter the solutions. Pour the hydroxide solution slowly in a thin stream into the sulphate one with constant stirring. Allow the precipitate to subside, and decant the clear liquid. Wash the magma with water until free from saline taste; drain the magma on muslin without pressure, then add water to it to make 40 fl. oz.

℥j. = 3 gr. of magnesium hydroxide. *N.B.* The distilled water used must be free from organic matter.

Paraffinum Compositum Liquidum

Camphor	30 gr.
Menthol	8 gr.
Thymol	4 gr.
Eucalyptol	8 gr.
Oil of wintergreen	30 gr.
Hydrastine	⅛ gr.
Liquid paraffin (colourless) sufficient to make	20 fl. oz.

Mix intimately to make a homogeneous liquid.

Pigmentum Iodi Comp.

(*Mandl's Solution*)

Iodine	5 gr.
Menthol	5 gr.
Potassium iodide	15 gr.
Glycerine	1 fl. oz.

Triturate until a perfect solution is obtained.

Pulvis Aloes et Canellæ

(*Hiera Picra*)

The London Pharmacopœia formula, p. 648.

Pulvis Antisepticus Solubilis

(N.F. 1906)

Salicylic acid	75 gr.
Carbolic acid	15 gr.
Eucalyptol	15 gr.
Menthol	15 gr.
Thymol	15 gr.
Zinc sulphate	4 oz.
Boric acid	30 oz.

Triturate the salicylic acid and zinc sulphate to a very fine powder, add the carbolic acid, eucalyptol, menthol, and thymol, and continue the trituration, adding the boric acid, in small portions at a time, until a uniform impalpable powder is obtained.

Pulvis Benzoatis Comp.

(*Skeenes' Mixture*)

Benzoic acid	1 part
Potassium bicarbonate	3 parts
Powdered sugar	12 parts

Triturate the benzoic acid and potassium bicarbonate in a hot mortar for ten minutes, then add the powdered sugar, previously warmed, and triturate all together, keeping mortar continuously hot.

Dose : ½ to 1 drachm.

Pulvis Santonini Comp.

Santonin	125 gr.
Subchloride of mercury	125 gr.
Rhubarb, in fine powder	200 gr.
Sugar	50 gr.
Oil of peppermint	15 min.

Mix intimately.

Four grains = 1 gr. each of santonin and calomel and 1⅜ gr. of rhubarb.

Sal Lithiæ Alkalinus

Caffeine	20 parts
Lithium carbonate	100 parts
Sodium bicarbonate	200 parts
Potassium bicarbonate	200 parts
Tartaric acid	400 parts
Powdered sugar	700 parts

Triturate each to a fine powder separately, then mix them intimately with light trituration.

Spiritus Asparagi Comp.

Asparagus-seed	1 oz.
Parsley-seed	1 oz.
Black haw	2¼ oz.
Henbane-leaves	100 gr.
Compound spirit of orange	4 fl. dr.
Diluted alcohol a sufficient quantity.	

Reduce the drugs to a powder and percolate with diluted alcohol to make 15½ fl. oz., to which add the compound spirit of orange.

(The 1908 formula contained guaiacum 1 oz.)

Syrupus Acaciæ

Mucilage of acacia	1 fl. oz.
Simple syrup	3 fl. oz.

Mix.

Syrupus Eucalypti Comp.

Fluid extract of eucalyptus	5 fl. oz.
Fluid extract of horehound	2 fl. oz.
Fluid extract of elecampane	2 fl. oz.
Fluid extract of liquorice	2 fl. oz.
Fluid extract of comfrey	2 fl. oz.
Ammonium chloride	480 gr.
Magnesium carbonate	240 gr.
Compound spirit of orange	4 fl. dr.
Sugar	28 oz.
Water to	40 fl. oz.

Triturate the fluid extracts and compound spirit of orange with the magnesium carbonate and 8 fl. oz. of water, and let stand two hours. Filter through a previously moistened filter, passing enough water through the filter to make 16 fl. oz. of filtrate, in which dissolve the sugar and ammonium chloride, then add sufficient water to make 40 fl. oz.

Syrupus Ferri et Mangani Iodidi
(N.F. 1906)

Iodine	3 oz. 172 gr.
Iron wire, fine, bright, and finely cut	1¼ oz.
Manganese sulphate	1 oz. 48 gr.
Potassium iodide	1 oz. 137 gr.
Sugar	32 oz.
Diluted alcohol	a sufficient quantity
Distilled water to	40 fl. oz.

Mix the iron with 10 fl. oz. of distilled water in a flask, add the iodine, and prepare a solution of ferrous iodide in the usual manner, aiding the process, if necessary, by heating the contents of the flask, at first gently, and finally to the boiling-point. Filter the liquid through a small filter, directly upon the sugar contained in a suitable bottle. Dissolve the manganese sulphate in 5 fl. oz. of distilled water, and the potassium iodide in 4 fl. oz. of diluted alcohol. Mix the two solutions, and filter into the same bottle which contains the sugar and the iron solution. Wash the filter with 10 fl. dr. of cold istilled water, receiving the washings in the same bottle. Agitate until the sugar is dissolved, and, if necessary, strain. Finally, make up the volume with distilled water to 40 fl. oz.

Each fluid drachm contains about 6 gr. of ferrous iodide and 3 gr. of manganese iodide.

Average dose, 15 minims.

Syr. Glycyrrhizæ Aromat.

The following formula is alternative to the one on p. 781 :—

Fluid extract of liquorice (for quinine mixtures)	8 fl. oz.
Oil of coriander	20 min.
Oil of cloves	10 min.
Alcohol (95-per-cent.)	2 fl. oz.
Granulated sugar	27 oz.
Water to	40 fl. oz.

Mix the fluid extract with the alcohol, in which the oils have been previously dissolved, and 8 fl. oz. of distilled water. Dissolve the sugar in this liquid, and add enough water to make 40 fl. oz.

Syr. Ferri Phosphatis Comp.
(N.F. 1906)

Precipitated calcium carbonate	1 oz. 200 gr.
Soluble ferric phosphate	320 gr.
Ammonium phosphate	320 gr.
Potassium bicarbonate	75 gr.
Sodium bicarbonate	75 gr.
Citric acid	3⅔ oz.
Glycerine	15 fl. oz.
Conc. phosphoric acid (B.P. 66·3-per-cent.)	2 oz.
Orange-flower water	5 fl. oz.
Tincture of cudbear	5 fl. dr.
Sugar	16 oz.
Water to	40 fl. oz.

Triturate the precipitated calcium carbonate with the potassium and sodium bicarbonates, the citric acid, glycerine, and orange-flower water, and gradually add the phosphoric acid, stirring until solution has been effected. Dissolve the ferric phosphate and the ammonium phosphate in 10 fl. oz. of hot water, cool, and add the solution to that previously prepared. Filter the whole through a pellet of absorbent cotton placed in the neck of a funnel, and receive the filtrate in a graduated bottle containing the sugar. Agitate until the latter is dissolved, then add the tincture of cudbear, and lastly, enough water to make 40 fl. oz.

Note. — Each fluidrachm contains about 2 gr. of calcium phosphate, 1 gr. each of phosphates of iron and of ammonium, and smaller quantities of sodium and potassium phosphates.

Average dose, 1 fl. dr.

Syrupus Piclis Liquidæ

Tar	3 oz.
White sand	4 oz.
Glycerine	4 fl. oz.
Sugar	32 oz.
Water to	40 fl. oz.

Mix the tar intimately with the white sand, pour on 8 fl. oz. of water, and stir frequently for twelve hours, then pour off the water and throw it away. Pour 16 fl. oz. of boiling water upon the residue, stir well and frequently for fifteen minutes, add the glycerine, then set aside for twenty-four hours, occasionally stirring; decant the clear solution, and filter. Dissolve the sugar in the filtrate with gentle heat, cool, strain, and pass enough water through the strainer to make 40 fl. oz.

Syrupus Pruni Virginianæ cum Oleo Morrhuæ et Malto

Cod-liver oil	10 fl. oz.
Extract of malt	10 fl. oz.
Glycerine	2 fl. oz.
Powdered acacia	2 oz.
Oil of peppermint	30 min.
Syrup of wild cherry to	40 fl. oz.

Triturate the oils with the powdered acacia until a homogeneous mixture results; then add, all at once, 12 fl. oz. of syrup of wild cherry and stir briskly with the pestle until the mixture is a perfect emulsion. Mix the extract of malt, glycerine, and 5 fl. oz. of syrup of wild cherry, and add gradually, under constant stirring, to the emulsion, and finally, if necessary, sufficient syrup of wild cherry to make 40 fl. oz.

Syrupus Quininæ Phospho-Muriatis

Potassium bicarbonate	616 gr.
Magnesium carbonate	352 gr.
Precipitated calcium carbonate	352 gr.
Quinine hydrochloride	70 gr.
Strychnine hydrochloride	2½ gr.
Orange-flower water, natural, concentrated	5 fl. oz.
Phosphoric acid (85-per-cent.)	5 fl. oz.
Soluble ferric phosphate	282 gr.
Water	310 min.
Syrup to	40 fl. oz.

Dissolve the several carbonates and the alkaloidal salts in the phosphoric acid, previously diluted with the orange-flower water. Then dissolve the soluble ferric phosphate in the water, previously warmed, and add it to the foregoing solution, and lastly add sufficient syrup to make 40 fl. oz.

Syrupus Sarsæ Compositus
(U.S.P. 1905)

Fluid extract of sarsaparilla	8 fl. oz.
Fluid extract of glycyrrhiza	5 fl. dr.
Fluid extract of senna	5 fl. dr.
Sugar	26 oz.
Oil of sassafras	2 min.
Oil of anise	2 min.
Oil of gaultheria	2 min.
Water to	40 fl. oz.

Add the oils to the mixed fluid extracts, and shake the liquid thoroughly, then add water enough to make up the volume to 24 fl. oz., and mix well. Set the mixture aside for one hour, and then filter it. Dissolve the sugar in the filtrate with the aid of a gentle heat. Cool, strain, and add enough water through the strainer to make the finished product measure 40 fl. oz.

Syrupus Senegæ

Fluid extract of senega	8 oz.
Glycerine	2 oz.
Sugar	40 oz.
Magnesium carbonate	360 gr.
Distilled water to	40 fl. oz.

Mix the fluid extract and glycerine, then triturate with the magnesium carbonate and 4 oz. of sugar, then gradually add 10 oz. of water, and filter. Dissolve the sugar in the remainder of the filtrate by the percolation method, and add water, if necessary, to make 40 fl. oz.

Syrupus Sulphatis Compositus

Compound Syrup of Magnesium, Iron, and Manganese Sulphates

Magnesium sulphate	5 oz.
Ferrous sulphate	80 gr.
Manganese sulphate	40 gr.
Dilute sulphuric acid	400 min.
Solution of carmine	100 min.
Syrup of lemon to	20 fl. oz.

Powder the salts and dissolve them in the syrup of lemon to which the dilute sulphuric acid has previously been added; finally add the solution of carmine, and filter if necessary.

Syrupus Thymi Comp.

Liquid extract of garden thyme	2 fl. oz.
Liquid extract of wild thyme	2 fl. oz.
Alcohol (90-per-cent.)	1 fl. oz.
Potassium bromide	400 gr.
Simple syrup to	20 oz.

Dissolve the potassium bromide in 1 fl. oz. of distilled water. Mix the alcohol, liquid extracts, and syrup; then add the potassium-bromide solution and sufficient distilled water to make 20 fl. oz.

Note.—Each fl. dr. contains 2½ gr. of potassium bromide.

Syrupus Trifolii Compositus

Fluid extract of red-clover blossoms	20 fl. dr.
Fluid extract of burdock	10 fl. dr.
Fluid extract of berberis aquifolium	10 fl. dr.
Fluid extract of stillingia	10 fl. dr.
Fluid extract of poke-root	10 fl. dr.
Fluid extract of cascara amarga	10 fl. dr.
Fluid extract of prickly-ash bark	2½ fl. dr.
Potassium iodide	320 gr.
Sugar	22 oz.
Water to	40 fl. oz.

Mix the fluid extracts with 12½ fl. oz. of water, let stand for a few hours, filter, then dissolve the sugar and potassium iodide in the filtrate, strain, and add sufficient water to make 40 fl. oz.

Thymolis Iodidum

(*Dithymol-Diiodide*)

Potassium iodide	124 gr.
Iodine, resublimed	93 gr.
Sodium hydroxide	27½ gr.
Thymol, in crystals	27 gr.
Distilled water a sufficient quantity	

Dissolve the iodine and potassium iodide in 1 fl. oz. of distilled water, and add distilled water to make 1½ fl. oz. Dissolve the sodium hydroxide in 1 fl. oz. of distilled water, and in this solution dissolve the thymol, and dilute with water to make 1⅝ fl. oz. Into this solution slowly pour the iodine solution under constant stirring; wash the resulting precipitate, by alternate affusion and decantation, with distilled water; drain, and dry carefully.

Tinctura Carminativa

Spirit of chloroform	5 fl. oz.
Compound tincture of cardamom	5 fl. oz.
Compound tincture of lavender	5 fl. oz.
Aromatic spirit of ammonia	5 fl. oz.

Mix.

Adult dose: 1 fl. dr.

Tinctura Ignatiæ Alkalina

(*Gouttes Amères de Baume*)

St. Ignatius' bean	20 oz.
Potassium carbonate	90 gr.
Alcohol (60-per-cent.) to	40 fl. oz.

Macerate for ten days and filter.

Dose : 5 to 20 minims.

Tinctura Saponis Viridis

Liniment of Soft Soap

Green soap	12 oz.
Oil of lavender	200 minims
Alcohol (95-per-cent.)	10 fl. oz.
Distilled water to	20 fl. oz.

Mix the oil of lavender with the alcohol, add the green soap, and macerate for forty-eight hours, agitating occasionally. Then filter and pass enough water through the filter to make 20 fl. oz.

Ung. Capsici Comp.

(*Unguentum Calefaciens*)

Oleoresin capsicum	2 fl. dr.
Croton oil	1 fl. dr.
Camphor (in powder)	240 gr.
Oil of turpentine	1 fl. oz.
Oil of cajuput	4 fl. dr.
Oil of cloves	2 fl. dr.
Oil of wintergreen (synthetic)	2 fl. dr.
Beeswax (yellow)	1 oz.
Soft paraffin (yellow)	16 oz.

Melt the beeswax, add the soft paraffin, and continue the heat, if necessary, until the latter liquefies; then add the remaining ingredients, which have been previously mixed together; strain through muslin, and stir until it begins to congeal.

Ung. Mentholis Comp.

Hydrated chloral	160 gr.
Menthol	320 gr.
Oil of wintergreen	320 gr.
Hydrous wool-fat	4 oz.
Soft paraffin (white) to make	16 oz.

Dissolve the hydrated chloral and menthol in the oil. Melt together, at a moderate heat, the hydrous wool-fat and soft paraffin, then add the above solution and stir constantly until it congeals.

Ung. Phenolis Camphoratum

Phenol	15 parts
Camphor	30 parts
Hydrous wool-fat	60 parts
Yellow beeswax	40 parts
Yellow soft paraffin	300 parts

Liquefy the paraffin, beeswax, and wool-fat by the aid of a gentle heat, and while the mixture is still warm dissolve in it the phenol and camphor, and stir until it congeals.

Ung. Resorcini Comp.

(*Soothing Ointment.* N.F. 1906 amended)

Resorcin	6 parts
Zinc oxide	6 parts
Bismuth subnitrate	6 parts
Oil of cade	12 parts
Yellow beeswax	10 parts
Soft paraffin (white)	25 parts
Anhydrous wool-fat	25 parts
Glycerine	10 parts

Dissolve the resorcin in the glycerine and incorporate the zinc oxide, bismuth subnitrate, and oil of cade. Melt the yellow beeswax, soft paraffin, and anhydrous wool-fat, add to the other mixture, and stir until it congeals.

Note.—Darkens on exposure to air and light, and should be kept in air-tight containers.

Ung. Sulphuris et Rusci Comp.

Sublimed sulphur, sifted	32 parts
Potassium carbonate	2 parts
Oil of birch-tar, Russian (oleum rusci)	2 parts
Zinc ointment	16 parts
Benzoated lard	32 parts

Mix intimately by trituration in order to produce a smooth and homogeneous ointment.

Ung. Sulphuris Cinerei Comp. (Edinburgh)

Grey sulphur (sulphur vivum)	8 oz.
Potassium nitrate	60 gr.
Powdered white hellebore	1 oz.
Green soap	3 oz.
Phenol (crystals)	120 gr.
Oil of bergamot	30 min.
Lard	24 oz.
Water	a sufficiency

Mix the lard and soap, and incorporate the grey sulphur and powdered hellebore with the mixture. Then add the potassium nitrate (previously dissolved in a little water) and the oil of bergamot, and lastly the phenol.

[*Compare with* No. 1, p. 818.]

Ung. Zinci Carbonatis Comp.

Zinc carbonate	800 gr.
Salicylic acid	100 gr.
Hydrous wool-fat	800 gr.
Soft paraffin (white)	5 oz.
Benzoated lard to	10 oz.

Melt the soft paraffin with gentle heat, remove from heat, and dust it into the zinc carbonate and salicylic acid, previously well powdered. When thoroughly mixed, gradually add the hydrous wool-fat and benzoated lard and stir until cool.

Ung. Zinci Stearatis

Zinc stearate, in fine powder	1 oz.
White paraffin ointment	1 oz.

Liquefy the paraffin ointment by the aid of a water-bath, add the zinc stearate, continuing the heat until the mixture becomes smooth, then stir while cooling until it congeals.

Vinum Cocæ (U.S.P. 1905)

Fluid extract of coca	2¾ fl. oz.
Alcohol (95-per-cent.)	3 fl. oz.
Sugar	3 oz.
Red wine to	40 fl. oz.

Dissolve the sugar in 20 fl. oz. of red wine, add the alcohol and fluid extract of coca, and enough red wine to make the liquid measure 40 fl. oz. Set the mixture aside for two days, then filter.

Dose : 4 fl. dr.

Vinum Olei Morrhuolis

Morrhuol (gaduol)	80 gr.
Fluid extract of liquorice	3 fl. oz.
Glycerine	2 fl. oz.
Syrup of wild cherry	4 fl. oz.
Liquid extract of malt	8 fl. oz.
Compound syrup of hypophosphites	4 fl. oz.
Fullers' earth (in powder)	240 gr.
Sherry wine to	40 fl. oz.

Mix the morrhuol with the glycerine and triturate with the fullers' earth; add the fluid extracts and syrup of wild cherry, allow it to stand for twenty-four hours, agitating occasionally, then filter and add the syrup of hypophosphites; lastly add sufficient sherry wine to make 40 fl. oz.

APPENDIX

WEIGHTS AND MEASURES

THE following equivalents between British and metric weights and measures are added for the convenience of those who use the latter system :—

1 pound (sign lb.) = 453·59 grams.
1 ounce (signs oz. and ℥) = $\frac{1}{16}$ lb., or 28·35 grams.
1 drachm (signs dr. and ʒ) = 60 grains, or 3·88 grams.
1 scruple (sign ℈) = 20 grains, or 1·3 gram nearly.
1 grain (sign gr.) = 0·0648 gram, or about 6½ cgr.

The sign ℥ properly means the old apothecaries' ounce of 480 grains, but is only used in this book to signify the avoirdupois ounce of 437½ grains and the fluid ounce of 480 minims.

1 gallon (sign C or Cong.) = 4·545 litres.
1 pint (sign O) = $\frac{1}{8}$ gallon, or 568·3 c.c.
1 fluid ounce (signs fl. oz. and f℥) = $\frac{1}{20}$ pint, or 28·41 c.c.
1 fluid drachm (signs fl. dr. and fʒ) = $\frac{1}{8}$ fluid ounce, or 3·55 c.c.
1 minim (sign ♏) = $\frac{1}{60}$ fluid drachm, or 0·059 c.c.

The signs therefore are :—

Cong. = gallon, O = pint, lb. = pound, ℥ = ounce, oz. = ounce, ʒ = drachm, dr. = drachm, ℈ = scruple, ♏ = minim, gr. = grain. Roman numerals are used with these : ss. (semisse) = ½.

Although the American minim (0·949 fluid grain) is slightly larger than the British (0·911 fluid grain) and the fluid ounce and drachm correspondingly large, the differences may with few exceptions be ignored ; but the fact should not be forgotten that the American pint is only 16 fluid ounces, the British pint is 20 fluid ounces.

STAMP-DUTIES ON MEDICINES

THE following are concise particulars of the law in force in Great Britain (but not in Ireland) regarding the payment of duty upon patent, proprietary, and secret medicines for human use, enforced by several Acts dating back to 1802.

RATES OF DUTY

For and upon every packet, box, bottle, pot, phial, or other enclosure, containing any drugs, herbs, pills, waters, essences, tinctures, powders, or other preparation or composition whatsoever used or applied, or to be used or applied, externally or internally, as medicines or medicaments for the prevention, cure, or relief of any disorder or complaint incident to or

in anywise affecting the human body, which shall be uttered or vended in Great Britain, where such packet, box, bottle, phial, or other enclosure with its contents

								£	s.	d.
Shall not exceed the price or value of one shilling								0	0	3
	s.	d.			s.	d.				
Shall exceed	1	0	and not exceed		2	6	...	0	0	6
,,	2	6	,,		4	0	...	0	1	0
,,	4	0	,,		10	0	...	0	2	0
,,	10	0	,,		20	0	...	0	4	0
,,	20	0	,,		30	0	...	0	6	0
,,	30	0	,,		50	0	...	1	0	0
,,	50	0	... ...	...	...	...	...	2	0	0

The duty is to be paid in stamps affixed by the owners and proprietors, or makers and compounders, or original and first vendors of the dutiable medicines, upon every packet thereof before it is first sold or delivered out of their custody for sale, or before it is uttered, vended, or exposed to sale, or offered or kept ready for sale, and not in bulk.

Licence

Every person making, or keeping ready for sale, or uttering, vending, or exposing to sale any dutiable medicine must before so doing give notice to the Commissioners of Customs and Excise or their officers in the locality, stating the particular shop or house where he is so to act. Thereupon the Commissioners will grant a licence, to be in force from September 1 yearly. This applies to one set of premises only, and the annual licence-duty is 5*s.* for each set of premises.

Articles which are Exempt from Duty

1. Drugs mentioned in the Books of Rates.

2. Drugs vended entire without any admixture whatsoever, the terms of the exemption being:—

All medicinal drugs whatsoever which shall be uttered or vended entire without any mixture or composition with any other drug or ingredient whatsoever by any surgeon, apothecary, chemist, or druggist, who hath served a regular apprenticeship, or by any person who hath served as a surgeon in the navy or army under any commission or appointment duly entered at the War Office or Navy Office, or by any other person whatsoever licensed to sell medicines chargeable with stamp-duty.

3. Known, admitted, and approved remedies uttered by any surgeon, apothecary, chemist, or druggist as aforesaid, which remedies are not secret, patent, or proprietary medicines, or are not claimed so to be, and which have not been, nor are or shall hereafter be, by any public notice, advertisement, or by any written or printed papers or handbills, or by any labels or words written or printed and affixed to or delivered with any such packet, box, bottle, pot, phial, or other enclosure aforesaid, held out or recommended to the public, by the owners, proprietors, makers, compounders, original or first vendors thereof as nostrums or proprietary medicines, or as specifics, or as beneficial for the prevention, cure, or relief of any such distemper, malady, ailment, or complaint. [Sub-

stantially this means, according to the High Court, that a chemist may recommend a medicine which has never been patent, proprietary, or secret, and sell it unstamped if its composition is stated on the label by reference or otherwise (*see* p. 990). The three exemptions are also extended to companies conforming to Section 3 of the Poisons and Pharmacy Act, 1908, and to persons who have served an indentured apprenticeship to an apothecary, chemist, or medical practitioner.]

4. All artificial mineral waters, and all waters impregnated with soda or mineral alkali or with carbonic-acid gas, and all compositions in a liquid or solid state to be used for the purpose of compounding or making any of the said waters, are exempt from duty.

5. Confectionery and lozenges are exempt unless when sold as medicines and stated to be beneficial for the prevention, cure, or relief of any distemper, malady, ailment, or disorder incident to or in anywise affecting the human body.

Articles which are outside the Acts

In no case is medicine stamp-duty chargeable

(1) If an article is not a medicine to be used as such for the human body, or
(2) If the article is not in a packet, box, bottle, pot, phial, or other enclosure, or
(3) If the article is not used or applied externally or internally, or
(4) If the article is not uttered, vended, or exposed to sale.

To illustrate each of these we note as to the first that mechanical appliances used for the prevention, cure, or relief of human ailments are outside the charge of duty, because they are not used as medicines or medicaments, but for support.

On the second point we note that lozenges, pills, tablets, or any other solid medicine sold in a twist of paper are not liable to duty, even though held out or recommended, because a twist of paper is officially declared not to be an 'enclosure' within the meaning of the Acts. Liquid medicines supplied in a measure-glass, poured into a cup, or taken at the counter from a glass are not sold in an enclosure within the meaning of the Acts, therefore are not liable to stamp-duty.

The third point is best illustrated by asthma powders or cigarettes to be burned and the fumes inhaled. It is not in these cases the article sold that is applied or used externally or internally, but the products of combustion.

The fourth point shows that there must be a sale or an intention to sell before duty is payable. Medicines given away are not dutiable.

Grounds of Liability to Duty

Broadly speaking, there are four separate and distinct grounds on which liability to stamp-duty may attach to a medicine which is not mentioned by name in the Schedule to the 1812 Act (52 Geo. III., cap. 150), viz. :—

(1) A claim, whether well founded or not, to any secret or art in the preparation.
(2) A claim, whether well founded or not, to any proprietary right in the preparation.

(3) The sale of the preparation, either present or past, under the authority of Letters Patent. [Any inquiry as to the protection of a medicine, whether by Letters Patent or otherwise, should be addressed to the Comptroller-General, Patent, Designs, and Trade-marks Office, 25 Southampton Buildings, Chancery Lane, London, W.C.]

(4) The use at any time or any handbill, label, or advertisement holding out the preparation as a nostrum, proprietary medicine, or specific, or recommending it as beneficial for the prevention, cure, or relief of any distemper, malady, or ailment affecting the human body.

TOILET ARTICLES are not liable unless sold as a medicine or medicament, or recommended as preventing, curing, or relieving any ailment or disorder.

AILMENT-NAMES.—So far as the question of liability depends merely on the wording of the descriptive label attached to the preparation,

(1) Medicines described by reference to a disease—*e.g.*, 'Cough-mixture,' 'Corn-paint'—must be stamped.

(2) Medicines described by reference to an organ of the body alone—*e.g.*, 'Liver-pills,' 'Hepatic Mixture,' 'Bronchial Mixture'—duty is not pressed for.

(3) Medicines described by reference to their operation in general terms—*e.g.*, 'Aperient Pills,' 'Emollient Ointment,' 'Astringent Mixture'—duty is not pressed for.

(4) But if to an organ of the body a word or words be added indicating the operation of the medicine upon the organ—*e.g.*, 'Blood-purifier,' 'Liver-invigorator,' 'Aperient Liver-mixture'—the preparation must be stamped.

KNOWN, ADMITTED, AND APPROVED REMEDIES may be sold unstamped by a qualified chemist and druggist, or limited company carrying on business in accordance with the Poisons and Pharmacy Act, 1908, Section 3, provided that either—

(1) The label contains an adequate indication of the ingredients, or

(2) That the medicine is prepared in accordance with a formula in the British Pharmacopœia or other well-known book of reference, and that this fact is stated or otherwise indicated on the label.

The Commissioners of Customs and Excise, Custom House, London, E.C., recognise this volume as a 'well-known book of reference,' and 'do not object to the letters P.F. being used as a sufficient reference to the book' (*C. & D.*, 1908, II., 54).

Fuller information on this subject will be found in *The Chemist and Druggist Diary.*

USE OF METHYLATED SPIRIT

THE following official regulations applicable to the United Kingdom should be observed by those who compound articles in which spirit is prescribed :—

1.—Methylated spirits may be used in the manufacture of sulphuric ether, chloroform, and hydrate of chloral, for use as a medicine or in any

art or manufacture ; and no objection is made to the substitution of methylated spirits for rectified spirits in the preparation of the soap, compound camphor, aconite, and belladonna liniments of the British Pharmacopœia.

2.—No methylated spirits, nor any derivative thereof, except sulphuric ether, chloroform, and hydrate of chloral, can lawfully be present in any article whatever capable of being used either wholly or partially as a beverage, or internally as a medicine, and no person can sell or have in his possession any such article containing methylated spirits or any derivative thereof, except as aforesaid, under a penalty of 100*l.* and forfeiture of the article with respect to which the offence has been committed.

3.—In any mixture of methylated spirits with gum resin, the quantity of gum resin in solution must not be less than 3 oz. per gallon ; and no alteration can be made in such mixture or 'finish,' except by the addition of gum resin or colouring-matter, under a penalty of 200*l.* and forfeiture of the spirits and article with respect to which the offence is committed.

4.—A chemist who desires to use methylated spirits in any process necessary for the production of medicinal and other extracts, in which no such spirits nor any derivative thereof remains, must make special application to the Commissioners of Customs and Excise for permission to use methylated spirits for that purpose.

5.—Essential oil or other flavouring-matter must not, without the express sanction of the Commissioners of Customs and Excise, be added to or mixed with methylated spirits.

6.—No person is at liberty, without the consent in writing of the Commissioners, to purify or attempt to purify methylated spirits or methylic alcohol, or, after methylated spirits or methylic alcohol have once been used, to recover or attempt to recover the spirits or alcohol by distillation or condensation, or in any other manner.

7.—A person who has been authorised to receive methylated spirits for use in any art or manufacture carried on by him, whether he holds or does not hold a licence as a retailer of methylated spirits, must obtain all methylated spirits from an authorised methylator, and in the manner directed by Sub-section 4 of Section 124 of the Spirits Act, 1880.

8.—If any person authorised to use methylated spirits shall not observe any prescribed regulation, he shall, in addition to any other fine or liability, incur a fine of 50*l.* ; and if any person licensed to use a still or retort is convicted of an offence in relation to methylated spirits, the Commissioners may suspend or revoke his licence.

By 'methylated spirits' in the oregoing both the 'industrial' and 'mineralised' spirits are meant. Persons who are licensed to sell mineralised methylated spirit may not use it for manufacturing purposes without the express permission of the Commissioners of Customs and Excise. Those who are not so licensed may employ the spirit in making the specified liniments and in dispensing liniments and lotions in which it is prescribed by medical practitioners (this may also be done by licensed vendors of the spirit), as well as in making varnishes. It will be noted that no person may receive 'industrial' methylated spirit without the authority of the Commissioners of Customs and Excise and undertaking to use it solely for the purpose sanctioned. Those desiring the authority must apply through the local Customs and Excise Supervisor.

THE RIDEAL-WALKER TEST

MR. J. AINSLIE WALKER, F.C.S., who, with Dr. Samuel Rideal, F.I.C., perfected this method of estimating the germicidal power of antiseptics and disinfectants, supplies the following details of the test:—

To 5 c.c. of a particular dilution of the disinfectant in sterilised water add 5 drops of a twenty-four hours' blood-heat culture of the organism in broth; shake and take sub-cultures every two-and-a-half minutes up to fifteen minutes. Incubate these sub-cultures for at least forty-eight hours at 37° C. Allowing thirty seconds for each act of medication and the same time for making each sub-culture, four different dilutions of the disinfectant under examination, together with one standard control, may be tested against the same culture, under conditions which make the results strictly comparable. If preferred, the field may be extended and divided into intervals of five minutes; but no table is complete which does not show a positive result in the first column and a negative result in the last. The strength and efficiency of the disinfectant are expressed in multiples of carbolic acid performing the same work—*i.e.*,' when a dilution of the disinfectant is obtained which does the same work as the standard carbolic-acid dilution, the former is divided by the latter, and a ratio termed the 'carbolic-acid coefficient' is thus obtained.

The following table shows the degree of refinement to which the test may be carried with a little care:—

Bacillus Typhosus, Twenty-four Hours' Broth Culture at 37° *C.*
(Room Temperature 15°–18° C.)

Sample	Dilution	Time Culture Exposed to Action of Disinfectant—minutes						Sub-cultures	
		2½	5	7½	10	12½	15	Period of Incubation	Temperature
Cyllin Medical	1 : 1900	—	—	—	—	—	—	48 hours	37° C.
Do.	1 : 1950	×	—	—	—	—	—	,,	,,
Do.	1 : 2000	×	×	—	—	—	—	,,	,,
Do.	1 : 2500	×	×	×	—	—	—	,,	,,
Carbolic acid .	1 : 100	×	×	—	—	—	—	,,	,,

$$\text{Rideal-Walker Coefficient } \frac{2000}{100} = 20{\cdot}0$$

The following nutrient broth is very constant in composition, and has been found to produce uniformly vigorous growths:—

Lemco	20 grams
Peptone (Witte's)	20 grams
Sodium chloride	10 grams
Water	1 litre

Boil the mixture for thirty minutes, neutralise with normal caustic soda (phenolphthalein indicator), add 15 cubic centimetres of normal hydrochloric acid, make up to 1 litre with distilled water, filter, and finally sterilise.

(For other methods *see* 'The Extra Pharmacopœia,' II., 2.)

MEMORANDA AS TO EXPORTED MEDICINES.

THE Commonwealth of Australia (and individual States therein), the Dominion of Canada, and the United States of America exercise control over the medicines imported into the countries, the principle adopted being similar in all three. These are summarised here for the convenience of manufacturers.

AUSTRALIA.

The Commonwealth statute entitled 'The Commerce (Trade Descriptions) Act, 1905,' deals with the description of medicines, and not with their composition unless with reference to the description. Under this Act many popular medicines have been delayed on landing at Australian ports because the authorities have considered the printed matter accompanying the goods (labels, circulars, or the like) to be contrary to the law. The following are the more important provisions of the Act, which is based largely on the Merchandise Marks Acts of the United Kingdom :—

Section 3. In this Act, unless the contrary appear—

'Officer' means an officer of Customs.

'Trade description,' in relation to any goods, means any description, statement, indication, or suggestion, direct or indirect—

(*a*) as to the nature, number, quantity, quality, purity, class, grade, measure, gauge, size, or weight of the goods; or

(*b*) as to the country or place in or at which the goods were made or produced; or

(*c*) as to the manufacturer or producer of the goods or the person by whom they were selected, packed, or in any way prepared for market; or

(*d*) as to the mode of manufacturing, producing, selecting, packing, or otherwise preparing the goods; or

(*e*) as to the materials or ingredients of which the goods are composed or from which they are derived; or

(*f*) as to the goods being the subject of an existing patent, privilege, or copyright,

and includes a Customs entry relating to goods; and any mark which, according to the custom of the trade or common repute, is commonly taken to be an indication of any of the above matters, shall be deemed to be a trade description within the meaning of this Act.

'False trade description' means a trade description which, by reason of anything contained therein or omitted therefrom, is false or likely to mislead in a material respect as regards the goods to which it is applied, and includes every alteration of a trade description, whether by way of addition, effacement, or otherwise, which makes the description false or likely to mislead in a material respect.

Section 4. (1) A trade description shall be deemed to be applied to goods if—

(*a*) it is applied to the goods themselves; or

(*b*) it is applied to any covering, label, reel, or thing used in connection with the goods; or

(*c*) it is used in any manner likely to lead to the belief that it describes or designates the goods.

(2) 'Covering' includes any stopper, glass, bottle, vessel, box, capsule, case, frame, or wrapper; and 'label' includes any band or ticket.

Section 7. (1) The regulations may prohibit the importation or introduction into Australia of any specified goods unless there is applied to them a trade description of such character, relating to such matters, and applied in such manner as is prescribed.

(2) All goods imported in contravention of any regulation under this section may be detained by the collector, and may by direction of the Minister be seized as forfeited to the King.

(3) Subject to the regulations, the Comptroller-General, or, on appeal from him, the Minister, may in any case, and if in his opinion the contravention has not occurred either knowingly or negligently, shall, permit any goods which are liable to be or have been seized as forfeited under this section, to be delivered to the owner or importer upon security being given to the satisfaction of the Comptroller-General that the prescribed trade description will be applied to the goods, or that they will be forthwith exported.

(4) No regulation under this section shall take effect until after the expiration of not less than three months from notification in the *Gazette*.

Section 11 deals with exportation from Australia.

Section 15. Sections 7 and 11 of this Act shall not apply to any goods other than :

(*a*) articles used as food or drink by man, or used in the manufacture or preparation of articles used for food or drink by man ; or
(*b*) medicines or medicinal preparations for internal or external use ; or
(*c*) manures ; or
(*d*) apparel (including boots and shoes) and the materials from which such apparel is manufactured ; or
(*da*) jewellery ; or
(*e*) seeds and plants.

Section 16. The regulations made under Sections 7 and 11 of this Act shall not prescribe a trade description which discloses trade secrets of manufacture or preparation, unless in the opinion of the Governor-General the disclosure is necessary for the protection of the health or welfare of the public.

The Act is administered by the Commonwealth Trade and Customs Department. At the head of it is the Minister of Trade and Customs, under whom is the Comptroller-General of Customs, who exercises certain statutory powers subject to an appeal to the Courts or to the Minister. He has the assistance of a medical referee, an analyst, and other officers, all of whom aim to compel manufacturers to tell the truth in print regarding their products, and not to print extravagant claims in regard to them.

REGULATIONS

The following are the most recent (October, 1913) regulations made under the Commerce Act as regards the importation of medicines and allied products :—

5. The importation of the goods enumerated in the next succeeding Regulation is prohibited unless there is applied to such goods a trade description in accordance with this Part.

6. The goods to which the foregoing Regulation applies are as follow :—

(*a*) Articles used for food or drink by man, or used in the manufacture or preparation of articles used for food or drink by man ;
(*b*) Medicines or medicinal preparations for internal or external use ;
(*c*) to (*f*) deal with other goods.

7. The trade description to be applied in accordance with this Part shall comply with the following provisions :—

(*a*) It shall be in the form of a principal label or brand affixed in a prominent position and in as permanent a manner as practicable to the goods, or, where affixture to the goods is impracticable, to the coverings containing the goods ; and
(*b*) It shall contain in prominent and legible characters a true description of the goods, and the name of the country or place in which the goods were made or produced ; and
(*c*) In cases where any weight or quantity is set out, it shall specify whether the weight or quantity so set out is gross or net.

8. In the case of the following goods the trade description shall, in addition, comply with the following provisions :

(*a*) In the case of articles used as food or drink by man, or used in the preparation of articles used as food or drink by man, and containing any deleterious or preservative substance, the trade description shall include a statement setting forth that the articles contain the deleterious or preservative substance, and in the case of preservative substances the amount thereof per pint or pound weight of the goods.
(*b*) In the case of foods for infants, if the food is not suitable for general use for infants under the age of six months, the trade description shall include, in legible characters and conspicuously displayed, the following words, namely, 'Not suitable for infants under the age of six months.'
(*e*) In the case of medicines and medicinal preparations prepared ready for internal use, and containing more than 17·5 per cent. by volume of proof spirit (equivalent to 10 per cent. by volume of ethyl alcohol) the trade description shall include a statement setting out the percentage, by volume, of proof spirit contained in the goods.
(*f*) In the case of medicines and medicinal preparations for internal or external use, if the goods contain any of the following drugs or poisonous chemical derivatives thereof, viz. :—

Free iodine or chemical compounds containing iodine or bromine, excepting iodoform and its substitutes ;

Poisonous compounds of antimony, arsenic, barium, bismuth, copper, lead, and mercury; or

Yellow phosphorus, hydrocyanic acid, and poisonous cyanides; or

Chloral, dormiol, isopral, acetone-chloroform (chloretone), dionin, heroin, paraldehyde, sulphonal, trional, tetronal, veronal, proponal, bromural, neuronal, or any other natural or synthetic hypnotic substance; or

Anilides, phenetidines, or pyrazolones, such as acetanilide, phenacetin, phenazone, or other derivatives of anilines, aminophenols, or quinolines, or other preparations possessing analgesic or antipyretic properties; or

Any drugs of vegetable origin being or containing poisonous alkaloids, poisonous glucosides, or other poisonous principles; or

Adrenaline or its substitutes, chloroform, nitroglycerin; or

Carbolic acid, cresols, guaiacol, creosol, naphthols, resorcin hydroquinone, pyrogallic acid; or

Cantharides, cotton-root, ergot, oil of pennyroyal, oil of rue, oil of savin, oil of tansy, oil of parsley, or any emmenagogue or reputed abortefacient substance; or

Paraphenylenediamine or similar irritant organic bases;

the trade description shall include an explicit statement to such effect, setting out, in regard to any substance specifically named in this list, such specified name of the substance or, in the case of any substance included but not specifically named in this list, the name most commonly applied to the substance in the English language in the Pharmacopœias of Great Britain and the United States of America, or in the British Pharmaceutical Codex, or other recognised authority, and also the quantity or proportion of the drug present in the goods.

(*fa*) In the case of liniments or veterinary medicines, if the goods contain methylated spirit, the trade description shall include a statement setting out in clear and prominent characters, and in the following form, the percentage of such substance contained in the goods, viz.:—'This preparation contains [quantity to be stated] per cent. of alcohol by volume in the form of methylated spirit.'

(*fb*) In the case of cultures and preparations of bacteria, yeasts, and similar micro-organisms, intended for medicinal, prophylactic, or therapeutic purposes, or for use as or in the preparation of articles of food or drink for man, the trade description shall include a statement as to the freedom of the culture or preparation from extraneous disease-producing micro-organisms, and also a statement as to the date up to which the culture or preparation will remain active.

Inquiries in regard to these matters should be made to the High Commissioner of the Australian Commonwealth, 72 Victoria Street, London, S.W.

CANADA

A DOMINION ACT (7-8 Edward VII., 20th July, 1908) to regulate the importation and sale of proprietary and patent medicines in the Dominion came into force on April 1, 1909. It defines proprietary or patent medicine as

every artificial remedy or prescription manufactured for the internal use of man, the name, composition, or definition of which is not to be found in the British Pharmacopœia, the Codex Medicamentarius of France, the Pharmacopœia of the United States, or any foreign Pharmacopœia approved by the Minister of Inland Revenue, or any formulary adopted by any properly constituted pharmaceutical association representing the Dominion of Canada approved by the Minister, or upon which is not printed in a conspicuous manner, and forming an inseparable part of the label and wrapper, the true formula or list of medicinal ingredients, which must not contain cocaine or any of its derivatives or preparations.

The Act provides, *inter alia*, that no proprietary or patent medicine shall be manufactured, imported, exposed, sold, or offered for sale in the Dominion if it contains :

(*a*) Cocaine or any of its salts or preparations.
(*b*) Alcohol in excess of the amount required as a solvent or preservative, or does not contain sufficient medication to prevent its use as an alcoholic beverage.
(*c*) Any of the following drugs, if the name is *not* conspicuously printed on an inseparable part of the label and wrapper of the bottle, box, or other container—provided that the name of such drug may not be printed on the wrapper if it appears to the Minister of Inland Revenue that the proportion used is not dangerous to health :

Acetanilide and other coal-tar products
Aconite and its preparations
Arsenical preparations
Atropine
Belladonna and its preparations
Cantharides
Carbolic acid
Chloral hydrate
Chloroform
Conia and compounds thereof
Corrosive sublimate
Cotton-root
Croton oil
Digitalis and derivatives
Ergot
Essential oil of mustard
Ether
Hellebore
Heroin
Hyoscyamine and its preparations
Indian hemp
Nux vomica and derivatives
Pennyroyal
Phenacetin
Prussic acid
Savin and preparations thereo
Strychnine and its preparations.
Sulphonal
Tansy
Tartrate of antimony
Veratria

REGULATIONS

The following regulations for the guidance of persons applying for certificates of registration are issued by the Department of Inland Revenue, Ottawa :—

1. The Proprietary or Patent Medicine Act applies solely to artificial remedies or prescriptions manufactured for the *internal* use of man ; hence, *external* preparations are exempt from registration, and of these the following, *provided they do not contain cocaine or any of its salts or preparations*, may be specially mentioned, viz. :—

Gargles, *Mouth Washes*, *Dentifrices*, *and Toothache Cures*, when not intended to be swallowed.
Nasal Balms, *Nasal Salves*, and *Snuffs*, when they contain no scheduled drugs nor the alkaloids thereof.
Catarrh Remedies, when not employed as a constitutional treatment and when containing no scheduled drugs nor the alkaloids thereof.

Eye and Ear Remedies, when not employed as a constitutional treatment.

Lotions and Liniments, when not employed as a constitutional treatment nor used as injections into the rectum.

Pile Ointments, *Pile Salves*, and *Urethral Injections*.

2. Applications for registration certificates must specify all the preparations to be manufactured for the internal use of man, whether containing scheduled drugs or not.

They must be made annually before the first of April and must, in each and every case, be accompanied by all the information required in connection with the original application, as well as the fee of $1.00. This annual fee covers the manufacture or, in the case of a foreign manufacturer, the importation of all preparations by the individual or company securing the registration number.

Additions may be made at any time to the original list of preparations, without the payment of an additional fee, by simply advising the Department to that effect, but if it is not intended that the names of scheduled drugs contained therein should be printed on the labels and wrappers, such additional list must be accompanied by the necessary affidavit.

3. All sheets, forming a part of any of the documents accompanying applications for registration certificates should be written *on one side* only.

4. In furnishing the list of preparations which it is desired to register, the designating name of each should be stated exactly as it is to be printed on the label and wrapper of the package. If the space on the application form supplied (No. 5) be insufficient to contain the complete list of preparations, insert therein the words 'as per list attached,' making out list on sheets of foolscap attached to application.

5. The Department desires to impress upon those in the trade who represent foreign manufacturers the necessity of having registration made in the name of the latter as *importers* and by this means enabling the foreign house to have the information required by the Act printed upon the labels and wrappers before shipment, and thus avoid unpacking and re-labelling the goods upon arrival in Canada.

6. A separate and distinct registration number, from that granted for the manufacture of proprietary or patent medicines in Canada, must be obtained for all such preparations imported.

7. When preparations are put up by wholesale manufacturers upon the order of an individual or company, the latter is deemed to be the manufacturer within the meaning of the Act (see Section 2, Sub-section *d*) and, as such, is responsible for the securing and furnishing of the affidavit required under Section 7.

8. The Department does not expect, nor is it desirable, that the formula of any preparation be furnished by the manufacturer, but the affidavit submitted with the application, and made out on a separate sheet therefrom, must, in every case, state the proportion of *scheduled* drugs per maximum dose, the quantity prescribed in twenty-four hours, as well as the particular preparation of each scheduled drug used and whether as referred to in the British, or any other legalised, Pharmacopœia.

9. When a preparation is put up in small packages and placed in one container, each of the small packages, if sold separately or employed as a separate part of a treatment or remedy, must have printed thereon the

information required by Section 4 of the Act, and, if they contain scheduled drugs in excess of that determined by the Department, the names of such drugs must also be printed thereon.

10. All new labels and wrappers must have printed thereon, and forming an inseparable part thereof, the information required by Section 4 of the Act. The overprinting, by means of a rubber stamp, was only permissible as respects labels and wrappers in stock on the 1st of April, 1909.

11. If any of the drugs mentioned below are included in the composition of a patent medicine, the names thereof must be printed on the labels and wrappers in a conspicuous manner, viz. :—

Oil of tansy.	Ergot.
Oil of savin.	Cotton-root.
Pennyroyal.	Hellebore.

12. The doses of medicines prescribed for children's use shall be as follows :

Children of ten years . . .	$\frac{1}{5}$ adult dose
,, five ,, . . .	$\frac{1}{4}$,,
,, two ,, . . .	$\frac{1}{8}$,,
,, one year and under . .	$\frac{1}{12}$,,

If opium, or any derivative thereof, is present in medicines designed for administration to infants under one year, its presence must be distinctly stated on the labels and wrappers.

It is preferable that the dosages above referred to should be stated on labels and wrappers in terms of drops.

UNITED STATES

THE Federal Food and Drug Act of the United States was passed on June 30, 1906, and came into force on January 1, 1907. The Act is strict in regard to the use of preservatives in foodstuffs, and it has been determined that no drug, or chemical, or harmful or deleterious dye or preservative may be added to foods or used in preparing them for the market, except common salt, sugar, wood-smoke, potable distilled liquor, vinegar, condiments, and saltpetre. Sulphur dioxide is permitted within limits for wines and food products, providing the amount does not exceed 350 mgrm. per litre in wines or per kilogram in solid foods, but not more than 70 mgrm. is permitted in the free state. Benzoate of soda, in quantities not exceeding one-tenth of 1 per cent., may be added to those foods in which generally heretofore it has been so used. The addition of benzoate of soda must be plainly stated upon the label of each package of such food. No objection will be made to foods which contain the ordinary quantities of sulphur dioxide, if the fact that such foods have been so prepared is plainly stated upon the label of each package. An abnormal quantity of sulphur dioxide placed in food for the purpose of marketing an excessive moisture content is regarded as fraudulent adulteration.

The use is permitted of the following coal-tar dyes :—

Red Shades: 107. Amaranth. 56. Ponceau 3 R. 517. Erythrosin.
Orange Shade: 85. Orange I.
Yellow Shade: 4. Naphthol yellow S.
Green Shade: 435. Light green S.F. yellowish.
Blue Shade: 692. Indigo disulfoacid.

Each of these colours must be free from any colouring-matter other than the one specified, and must not contain any contamination due to imperfect or incomplete manufacture.

The Act also lays down stringent regulations regarding the branding of foods and drugs, and considers any preparation to be misbranded

(1) If false claims are made regarding its place of origin.

(2) If the maker's name be falsely stated (the name of the maker need not appear on the package, but if any name appears it must be the correct one).

(3) If false claims are made regarding its therapeutic value. Such terms as 'Cure for Consumption' are not allowed; the word 'remedy' or its equivalent must be used.

The law is very sweeping in the last particular, declaring any preparation misbranded if the label bear any statement which is 'false or misleading *in any particular*.' Syrup of figs, *e.g.*, must be a true syrup prepared from figs, and figs must be the principal constituent. If it contain a considerable amount of some other drug, the word 'compound' must be added. In respect to drugs of any kind it should be noted that 'alcohol' means common or ethyl alcohol, and no other alcohol is permissible in the manufacture of drugs, except as specified in the United States Pharmacopœia or the National Formulary; consequently methylated preparations are not permitted to be imported. Every drug containing any of the following as ingredients must bear a statement on the label of the quantity or proportion of it:—

ALCOHOL, ETHYL (Cologne spirits, grain alcohol, rectified spirits, spirits, and spirits of wine).—*Derivatives*: Aldehyde, ether, ethyl acetate, ethyl nitrite, and paraldehyde. *Preparations containing alcohol*: Bitters, brandies, cordials, elixirs, essences, fluid extracts, spirits, syrups, tinctures, tonics, whiskies, and wines.

MORPHINE, ALKALOID.—*Derivatives*: Apomorphine, dionine, peronine, morphine acetate, hydrochloride, sulphate, and other salts of morphine. *Preparations containing morphine or derivatives of morphine*: Bougies, catarrh-snuff, chlorodyne, compound powder of morphine, crayons, elixirs, granules, pills, solutions, syrups, suppositories, tablets, triturates, and troches.

OPIUM, GUM. *Preparations of Opium*: Extracts, denarcotised opium, granulated opium, and powdered opium, bougies, brown mixture, carminative mixtures, crayons, Dover's powder, elixirs, liniments, ointments, paregoric, pills, plasters, syrups, suppositories, tablets, tinctures, troches, vinegars, and wines. *Derivatives*: Codeine, alkaloid, hydrochloride, phosphate, sulphate, and other salts of codeine. *Preparations containing codeine or its salts*: Elixirs, pills, syrups, and tablets.

COCAINE, ALKALOID. — *Derivatives*: Cocaine hydrochloride, oleate, and other salts. *Preparations containing cocaine or salts of cocaine*: Coca-leaves, catarrh-powders, elixirs, extracts, infusion of coca, ointments, paste, pencils, pills, solutions, syrups, tablets, tinctures, troches, and wines.

HEROIN. — *Preparations containing heroin*: Syrups, elixirs, pills, and tablets.

ALPHA AND BETA EUCAINE.—*Preparations*: Mixtures, ointments, powders, and solutions.

CHLOROFORM.—*Preparations containing chloroform*: Chloranodyne, elixirs, emulsions, liniments, mixtures, spirits, and syrups.

CANNABIS INDICA.—*Preparations of cannabis indica*: Corn-remedies, extracts, mixtures, pills, powders, tablets, and tinctures.

CHLORAL HYDRATE (Chloral, U.S. Pharmacopœia, 1890).—*Derivatives*: Chloral-acetophenonoxim, chloral alcoholate, chloralamide, chloralimide, chloral orthoform, chloralose, dormiol, hypnal, and uraline. *Preparations containing chloral hydrate or its derivatives*: Chloral camphorate, elixirs, liniments, mixtures, ointments, suppositories, syrups, and tablets.

ACETANILIDE (Antifebrine, Phenylacetamide).—*Derivatives*: Acetphenetidine, citrophen, diacetanilide, lactophenin, methoxy-acetanilide, methylacetanilide, para-iodoacetanilide, and phenacetine. *Preparations containing acetanilide or derivatives*: Analgesics, antineuralgics, antirheumatics, cachets, capsules, cold remedies, elixirs, granular effervescing salts, headache-powders, mixtures, pain-remedies, pills, and tablets.

The United States Supreme Court having decided that misbranding of medicines under Section 8 of the Act is restricted to false statements as to the ingredients or drugs of which they are composed, and does not refer to curative claims made on behalf of the preparations, the Legislature in 1912 amended Section 8 by the insertion of a sub-section providing that a drug 'shall be deemed to be misbranded if its package or label shall bear or contain any statement, design, or device regarding the curative or therapeutic effect of such article or any of the ingredients or substances contained therein, which is false and fraudulent.'

GARDEN PESTS

THE insects and fungi which are injurious to vegetation are briefly described in the following paragraphs, with the insecticides suitable in each case, the reference numbers being to the formulas in the chapter on Horticultural and Agricultural Preparations, beginning on page 409.

American Gooseberry Mildew is a distinct disease from ordinary gooseberry mildew. It has created a great sensation in recent years, and a special Act of Parliament has been passed to deal with it. It is a scheduled disease, and its existence must at once be notified to the Board of Agriculture. It first appears as a delicate white mildew and has a cobwebby appearance. The tips of the shoots of infected plants turn brown and shrivel up.

Apple-blossom Weevils hibernate in crevices of the bark during the winter. When the warm spring weather sets in, about the end of March, they make their way to the blossom buds of apple and pear trees. The female bores a hole in the bud and deposits an egg which in about a week hatches out a maggot which lies in the bud and devours stamens and pistil, causing the petals to wither. A fortnight later the larvæ change to pupæ, and in another ten days appear as perfect weevils, escaping through the hole bored in the bud by their parent. The stems of the trees should be sprayed in winter with caustic alkali wash No. 42, or with a lime and sulphur wash No. 62.

The Apple Sucker is a minute insect, about $\frac{1}{8}$ inch in length, and though very injurious to fruit and wood buds, its presence is frequently not discovered. The female deposits her eggs on the young shoots from September to November, and hatching takes place in spring when the tiny larvæ make for the nearest fruit bud and suck out the sap, and the growth of the blossom is arrested. The larva goes through three successive changes, and finally pupates and comes forth as a perfect insect. Spray the trees in February or March with carbolic emulsion No. 41, or in September with kerosene emulsion No. 56.

Apple Sawfly.—This insect causes injury to the young fruit of apples much in the same way as the codlin moth, except that the larvæ of the latter make tunnels, while those of the former simply eat out a cavity in the centre of the fruit. Spray the leaves directly the apples form with Paris green mixture No. 11 or arsenate of soda No. 39.

Apple-tree Mildew.—This fungus attacks the young shoots and leaves

of the apple-tree, covering them with a dense white powder in summer. It prefers to attack old trees. Spray the leaves while young with sulphide of potassium solution No. 64.

Apple and Pear Scab is due to a fungoid parasite which attacks both foliage and fruit of apple and pear trees, the fruit becoming spotted and cracked and rendered utterly useless for sale. A good preventive is to spray the trees with dilute Bordeaux mixture No. 13 or sulphate of iron solution No. 21.

Asparagus Beetle.—This is a very destructive pest. One beetle will lay hundreds of eggs on the stems and leaves in late spring; the eggs hatch out in a few days and the larvæ commence eating the leaves, leaving nothing but the bare stem. The larvæ are best destroyed by spraying the leaves with arsenate wash No. 10 or 39, and in autumn the soil should be treated with a fumigant, such as naphthalin or carbolic emulsion.

Asparagus Fly.—These flies issue early in April and on to July, and lay their eggs beneath the scales of the asparagus heads as these appear above ground. In a few days the larvæ hatch out and bore downward into the tender stalks and young shoots. The affected shoots become brownish or yellow, and finally rot below the ground. Sticky fly papers suspended near the area are of service, or the tops of the shoots may be sprinkled with charcoal when the dew is on them. This discourages the flies from laying their eggs.

Bean-pod Canker is a disease that now and then attacks the pods of runner and kidney beans, which are then worthless for food. It appears first as dark specks but eventually the pods become covered with a white fungoid growth. Spray the plants before flowering with Bordeaux mixture No. 13 or solution of sulphide of potassium No. 64.

Black-currant Mite.—A microscopic insect, also known as the bud mite, as it is found chiefly in the buds. The eggs begin to hatch out about March, and the young mites travel about the bushes in May and June. They are very destructive and in cases where there is a bad attack the proper remedy is to burn the bushes. A good preventive measure is to spray the bushes with eau grison No. 34 or No. 61.

Black Rot of Cabbages has only recently appeared in this country. The disease is caused by a yellow bacterium, and the result is that the heads rot off. Burn every infected plant promptly and dress the vacant land with gas-lime.

Black Scab of Potatoes.—This is a comparatively new disease which has inflicted serious damage on the potato crop throughout the country. It has now been scheduled as a notifiable disease, and failure to report its presence renders the grower liable to a fine of £10. The disease attacks the tubers by means of spores, and the mycelium vegetates in the eyes of the tubers, producing black spongy wrinkled scabs over the tuber and rendering it quite unfit to eat. When the disease is notified, the Board of Agriculture deals with the infected crop and advises as to treatment of the soil.

Brown Rot is a fungus that attacks fruit, most commonly apples. The fungus appears first on the leaves and spreads to the fruit, where it

produces a brownish discoloration of the skin followed by irregular circles of tufts of fungus. All infected fruit should be gathered and burned, and in early spring the trees should be sprayed with Bordeaux wash No. 13 or potassium-sulphide solution No. 64.

Bunt and **Smut** are fungus diseases of cereals which cause much damage to wheat, barley, and oat crops. No method has been devised for curing wheat and barley smut, but oat smut may be prevented by soaking the seed in formaldehyde solution No. 49 or copper-sulphate solution No. 43.

The Cabbage-moth appears in May onward during the summer. It lays its eggs on the cabbage leaf usually, though the larvæ attack a great variety of other plants, and these hatch out in six or seven days. They at once attack the plant, eating their way into the heart and defiling it with moist green excreta which is very disgusting in appearance. They are very greedy and spoil as well as eat the plants. Hand picking should be resorted to before the caterpillars have left the outer leaves. All chrysalids should be destroyed when the ground is dug in winter.

Cabbage White Rust.—A fairly common fungoid disease on cabbages and other plants of the same order. It appears in the form of white patches or irregular masses of snow-white powder. The only remedy is to pull up and burn every infected plant.

Canker Fungus.—This is a fungoid disease which attacks many fruit trees, especially apple trees. The mycelium of the fungus attacks the bark, which becomes cankered and eaten away, and then the wood is affected. Prompt removal of diseased branches is advised, as a shoot once attacked is doomed. In stout branches it is recommended to cut away the cankered portion and paint with Stockholm tar.

Carrot-fly.—The roots of carrots are attacked by the maggot of this fly, which lays its eggs on the carrots in early summer. The best remedy is to dress the soil with naphthalin to destroy the pupæ and prevent them developing into flies.

Celery-fly.—The female insects deposit their eggs within the skin of the celery leaves where they are hatched into small green larvæ, which produce large blisters on the leaves. The foliage completely and rapidly decays. The larvæ or maggots leave the plant and turn to pupæ in the earth. There are several broods during the year, but the pupæ last produced hibernate in the soil, and appear in the spring as perfect insects. Owing to the maggots feeding within the leaves it is difficult to reach them with an insecticide, but the flies may be prevented depositing their eggs by spraying the foliage during May, June, and July with a weak kerosene wash. Dress the ground with naphthalin and destroy the pupæ.

Chafer-beetles.—There are three varieties of chafer-beetles, the May bug, the summer chafer, and the garden chafer, all of which damage rose bushes during the summer. There is no way of dealing with these beetles except searching for them on dull days or in the evening and killing them, and all fat white grubs in the soil should be promptly destroyed.

The Codlin Moth appears in May and flits in the twilight or early morning from tree to tree. It deposits one egg on the newly formed

apple and in a few days a caterpillar is hatched which bores into the fruit where it remains till fully grown, about a month. It then drops to the ground as the apple falls, and it crawls out, ascends the nearest tree, enters a crevice, surrounds itself with a silken case, and next spring reappears as a perfect insect. Spray the trees directly the petals fall, and destroy the eggs with one of the arsenate washes No. 10 and 39.

Coral-spot Disease.—This is a fungus the spores of which may fall on fractures in the bark of trees, and, germinating there, produce mycelia which develop under the bark and kill both leaves and branch. Its earliest presence may be detected by the appearance of bright coral-red spots on the bark. It attacks apples, pears, and currants, and the only plan is to remove infected branches and burn them, and if the trunk is infected, burn the tree.

Cucumber and Melon Leaf-blotch.—This is caused by a fungus which attacks the under-sides of cucumber-leaves in the form of a white mould. It is not very common. The remedy is to spray underneath the leaves with Bordeaux wash No. 13 or Woburn wash No. 56.

Currant Aphides, or plant lice, are often very injurious. They appear in April and continue till August, and chiefly attack the ends of the shoots, causing them to curl and twist up. Spray the bushes attacked the previous year thoroughly with caustic alkali wash No. 42, after pruning, and collect and burn all prunings. Kerosene emulsion No. 24 or quassia wash No. 29 or No. 2 should be sprayed on foliage.

Daddy Longlegs or Crane Fly.—The larvæ of this insect are frequently very destructive to various crops of the farm and garden; they attack all kinds of corn, root crops, leguminous crops, or garden plants indiscriminately. Prevention is very difficult, and the best cure is to turn up the soil thoroughly and expose the grub to the attentions of birds. On the farm the land should be double harrowed and rolled with a heavy roller. The harrow brings the grubs to the surface, and they are either crushed by the roller or preyed on by rooks, starlings, and other birds.

Dry Rot is caused by a fungus which thrives best in a moist, somewhat alkaline medium. It is most destructive of woodwork and it appears to be on the increase. The mycelium often forms felt-like sheets of large size that can be removed intact. The spread of the mycelium can be arrested by the application of carbolic acid or of a spirituous solution of corrosive sublimate.

Diamond-back Moth.—The caterpillars of this moth cause much loss in some years by their attacks on turnips, cabbages, and plants of the *Brassica* family generally; indeed, on the whole range of crucifers. The remedies are soot and sulphur or soot and lime freely applied, or in the garden spraying with paraffin emulsion. A species of the ichneumon is a natural enemy of the caterpillar, and small birds are the most effective exterminators.

Finger-and-Toe in Turnips is an extremely infectious ungoid disease and very deadly to the turnip crop. The most effective preventive is the liberal application of burned lime to the soil.

'Flea' Beetle.—The Blue Cabbage Flea is a tiny violet-coloured beetle

which produces a maggot that burrows in cabbage and turnip leaves. Free manuring, liberal liming in February, and free use of hoe in summer will help to reduce the pests. Burn the worst infested leaves.

Fruit-tree Beetle.—Both the beetle and its larvæ are injurious to fruit trees, boring galleries just underneath the bark. Once they are inside the bark it is impossible to get at them, and the best thing to do with a tree that is attacked is to cut it down and burn it, thus destroying both beetles and larvæ. Shoots and branches that show signs of dying are likely to be infested and should be cut off and burned at once.

Fungus Disease of Young Fruit Trees sometimes causes much injury. It is produced by a parasitic fungus which develops in the bark and cambium layer. The spores find their way into wounds caused by careless pruning. As a preventive paint the newly made wounds with Stockholm tar. At the same time paint the trunks with a thick mixture of soft soap, washing-soda, and lime, applied with a paint-brush.

Gooseberry Black Knot is a fungus which attacks the gooseberry and currant, causing first the wilting of the leaves and then the development of warty nodules, after which the affected branch usually dies. The only remedy is to cut off and burn all infected growths.

Gooseberry 'Cluster-cups.'—A fungoid disease. Both leaves and fruit when infected with it are dotted with little round bodies having white jagged edges and bright orange centres, the latter being the spores. Remove and burn the infected leaves and fruit.

Gooseberry-Mildew is a minute fungus which develops on the under surface of gooseberry leaves and covers them with a dense white mould. While not very injurious, it should be got rid of, and potassium-sulphide wash No 27 should be sprayed on the foliage.

Goat Moth and **Wood Leopard Moth.**—The larvæ of both these moths bore into the branches and trunks of fruit trees and eventually cause their ill-health or death. The use of cyanide of sulphur fumes or forcing carbolic acid or paraffin emulsion into the holes are the only remedies short of cutting down the tree and burning it.

Gooseberry Sawfly.—This pest, which is also partial to the red currant, is very voracious, and as there are usually two or three broods of larvæ in a season, they do much damage. The female flies lay their eggs in April or May, and the larvæ hatch out in about eight days, and twenty days later they enter the pupal stage. The moment the caterpillars are discovered spray the foliage with kerosene emulsion No. 24 or hellebore spray No. 50 or No. 4.

Hessian Fly.—The favourite food-plants of this fly are wheat, barley, and rye. Of recent years little has been heard of any serious damage caused by the larvæ of this fly. There are no means other than burning the stubble or very deep ploughing for getting rid of the insect.

Magpie Moth is responsible for an immense amount of damage to gooseberry bushes. The moth generally makes its appearance in August, and lays its eggs near the midribs on gooseberry or currant leaves. In ten days the eggs are hatched, and the larvæ feed voraciously on the leaves. When fed they drop to the ground and hibernate just under the

surface till the following spring, when they ascend the bushes and again start to feed upon the foliage. By June they are fully fed, and they then enter the pupal stage to emerge as moths in August. As soon as the caterpillars are observed in spring dust the bushes and the ground underneath liberally with hellebore, or spray with formula No. 50. In the autumn fork naphthalin into the soil to kill the hibernating larvæ.

Mangold-fly is the parent of small greenish maggots which feed on the pulp of the leaves of mangold and beet, and as a consequence the leaves shrivel and the plant growth is checked. When full grown the maggots bury themselves in the soil and eventually develop into flies. The best remedy is to fumigate the soil with naphthalin, paraffin, or carbolic wash No. 41, as for weevils.

Millipedes and **Centipedes** belong to the same group of the animal kingdom, but they are unlike in food habits and structure. The centipedes are useful, being carnivorous, and feeding on insects, larvæ, snails, slugs, and worms, while the millipedes are vegetable feeders and destroy roots, bulbs, tubers, &c. Millipedes may be trapped by mangold baits and collected and destroyed, or killed by injecting carbon bisulphide into the soil.

Mushroom-disease.— Mushrooms are sometimes attacked by a parasitic fungus which causes the stem eventually to become a putrid mass. The remedy is to clear out the whole of the manure and soil, and spray the roof, walls, and floor of the mushroom house with sulphate of copper solution, 1 lb. to 15 gals. of water. This should be done three times at intervals of ten days.

Mussel Scale.—This insect, which resembles a mussel in shape, is sometimes found in large quantities on the shoots of apple trees, and when present it does much harm by sucking the sap. The outer scale or covering is not the insect but simply the shelter for it. After pruning in winter, spray the tree with caustic-alkali wash No. 42 or with lime, sulphur, and salt wash No. 62.

Onion-fly does much mischief by its grubs or maggots to onion, shallot, and garlic crops. The flies deposit their eggs on the young onions in May, June, and July, and the eggs speedily hatch out maggots, which at once commence to feed on the bulbs. The maggots feed for about a fortnight and then turn into pupæ in the soil, and within three weeks the flies appear and lay another lot of eggs, so that bulbs previously uninjured are exposed to attack. All affected plants should be lifted with a trowel and burnt, and a little paraffin poured into the hole to kill any maggot that may have escaped. Dress the ground in the autumn or before sowing with a liberal application of naphthalin.

Onion Mildew is a fungus which occurs in the form of a mould on the leaves, and which does serious injury to the crop. The plants may be sprayed with sulphide of potassium solution No. 64, or the leaves dusted early in the morning with a mixture of two parts slaked lime and one part sulphur.

Peach-leaf Curl.—This is a fungoid disease which rarely attacks trees grown under glass, but frequently does trees grown outdoors in cold

districts. As a preventive spray foliage early in the season with potassium-sulphide solution No. 64, or before the leaves appear with Bordeaux mixture No. 13.

Pea and Bean Black Fly or **Thrips.**—Little is known about the various species of thrips, but onions, cabbages, runner beans, peas, and potatoes are all subject to attack, and the young blossoms of the pea and runner bean are the chief victims. Spraying with a quassia mixture such as No. 1 has a good effect when the foliage is attacked.

Pea and Bean Weevils.—These troublesome insects, which measure ¼ in. or less in length, hide in the soil by day and crawl up the stems of peas and beans by night, and devour the soft parts of the leaves. They appear usually in June, but may be as early as March. Syringing the plants in the evening with washes No. 1, 3, or 59 will render the foliage distasteful to the weevils, and the soil should be dressed with naphthalin or other fumigant.

Pear-midge is responsible for the formation of distorted fruits. The insect deposits her eggs in the opened blossoms and in six days the eggs hatch, and the larvæ at once commence to feed on the embryo fruit, which may contain a score of maggots. It is not till the fruit shows by its unequal development that their presence is known. The hibernating larvæ should be killed by digging in a fumigant such as naphthalin or paraffin.

Pear and Cherry Sawfly.—The larvæ of this fly do great damage in some seasons to pear and cherry foliage. During the development of the larva it assumes various forms, moulting no fewer than five times. After the final one it crawls down to the earth and forms a pupa in the soil. The remedy is to spray in summer with Paris green wash No. 11 or arsenate of lead No. 10 or 39 to poison the leaves on which the larvæ are feeding, and lime or soot should be dug into the soil.

Pine Beetle appears in April or May and bores a hole in pine trees and deposits its eggs therein. When the larvæ are hatched, they bore tunnels also. In due course they pupate and emerge as beetles in August. The young beetles at once settle on the young shoots, bore into them, causing them to die. The only remedy is to cut down and remove sickly trees and diseased shoots.

Pine Sawfly.—Considerable damage is often done to pine and fir trees by the larvæ of this sawfly, and remedies are difficult to get. All loose material round the trees in the autumn should be gathered and burned.

Pine Weevil feeds on the bark of the young shoots of pines, fir, spruce, and larch.

Pith-moth.—A small moth which appears in June and July, and lays its eggs on the leaves of apple trees, on which the larvæ feed for a time. Late in autumn the larvæ bore into the bark or shoots, remain there till January, then tunnel into the centre of the shoot and feed on the pith. They issue from the shoots as moths in June. Their presence is detected by the withering of the foliage and the turning brown of the shoots. The only remedy is to cut off all withered shoots and burn them. Insecticides cannot reach the larvæ.

Potato-disease.—This dreaded disease, which commits so much havoc in wet seasons, is caused by a fungus the mycelium of which penetrates the tissues of the leaves and destroys them. Once the disease has appeared the only remedy is to burn the infected haulm and tubers. Of late years preventive measures have been adopted with success. Spray in July two or three times before the disease appears with Bordeaux wash No. 13 or Woburn wash No. 56.

Potato-leaf Curl is a fungoid disease which causes the foliage to curl at the edges and later to develop mottled spots. All diseased haulms and tubers should be burned, and the soil dressed with quicklime in winter.

Potato-scab.—A fungoid disease which produces unsightly scab-like eruptions of a superficial nature. It has been found that tubers grown in sour soils or where acid manures have been used are most liable to infection. As a preventive steep the seed tubers in formaldehyde solution No. 49, and when dry plant them. Flowers of sulphur sprinkled in the trenches is also said to be a good preventive.

The Raspberry Moth lays its eggs in June on the flowers of the raspberry, and in a week's time the caterpillars are hatched. These drop to the soil, where they hibernate in cocoons. In April the larvæ leave the cocoons, crawl up the canes to the nearest bud, and eat their way into the pith, on which they feed voraciously, the cane withering and dying in consequence. Destroy all affected canes, dress the soil with soot or lime in early winter, and spray with kerosene emulsion No. 24 just before the buds burst.

Red Spider.—This pest is common in greenhouses when the atmosphere is too dry and hot. It also infests the foliage of figs and peaches, and the best treatment is to spray with a quassia wash No. 1 or 59.

Ribbon-footed Corn-fly.—This insect is not of much interest to the horticulturist, as its larvæ devote their attention entirely to wheat and barley, doing immense damage to these crops in certain years.

Root-knot Disease.—The roots of tomatoes and cucumbers are sometimes infested with a microscopic animal, the eelworm, which bores into the cells, rupturing them and causing knots or swellings to form and the gradual wilting of the plant. Burn all plants attacked, and treat intended compost with carbolic wash 1 in 20, or mix with naphthalin a few weeks before using.

Sclerotium Disease is due to a parasitic fungus which attacks a great variety of plants, such as potatoes, turnips, carrots, peas, beans, lettuce, bulbs, &c. The best cure is to apply burnt lime or gas-lime to the land where the disease has existed.

Shoot and Fruit Moth of Currants.—These insects are so named because the caterpillars tunnel the shoots of plants and also the fruit, and in the latter case feed on the seed. The best treatment is to spray in winter with the Woburn wash No. 56.

Sleeping Disease is a fungoid disease which causes the leaves of the tomato to assume a dull colour, then droop, and finally to collapse suddenly. Fungicides are useless in this case, and the plants must be pulled up and burned. The walls, paths floor, &c., should be syringed with a strong solution of iron sulphate or copper sulphate.

Slugs and Snails.—These animals are harmful both in the vegetable garden and the flower garden. Dressing the soil with a fumigant, such as naphthalin will destroy the eggs; so also a dressing of burnt lime in February. An ounce of liquid ammonia in a gallon of water kills both snails and slugs, and does no harm to plants; and dustings of soot or lime repeated every evening for a week will help to get rid of them.

Small Ermine Moths.—These moths have white or greyish white wings, spotted with black, and are on the wing from the middle of July to the middle of August, when they lay their eggs in clusters on apple buds and shoots. The eggs hatch either in the autumn or the following spring, and in May the larvæ spin a web, under which they live and feed ravenously on the foliage. When full grown the caterpillar spins a cocoon and pupates in this till July, when it emerges as a moth. One remedy is to spray thoroughly with kerosene emulsion No. 24, or winter spraying with caustic-alkali wash No. 42.

Stem Eelworm.—Many crops and grasses are affected by the stem eelworm, occasionally beans, more frequently onions, while hyacinths and other bulbs are also affected. On the farm deep ploughing and trenching in the garden are necessary, and liberal manuring with sulphate of potash and sulphate of ammonia.

Surface Caterpillars.—This term is applied to the larvæ of the turnip moth and the heart and dart moth, both of which cause serious injury to farm and garden crops, particularly root crops and potatoes. The larvæ hide beneath the surface of the soil, and usually attack the plants just at or below the surface and nearly always at night time. Paris green wash No. 11 is often sprayed on clover and grass plants, and these poisoned plants tied into bundles and distributed at intervals among the infested crop. In market-gardens hand picking at night with the aid of a lantern is recommended.

Weevils do much damage to plums, raspberries, strawberries, hops, vines, &c. They lay their eggs in summer, and grubs hatch from these in August and September and attack any convenient root in the vicinity. Sterilise the soil by digging in naphthalin at the rate of 1½ oz. per square yard, or saturate ashes with paraffin and sprinkle the mixture around the plants. Carbolic wash No. 41 is also useful for this purpose.

Winter Moths, of which there are many varieties, are responsible for an immense amount of damage to fruit trees. The females, which are wingless, crawl up the trunks in autumn, winter, or spring, and lay their eggs in the crevices of the bark, the eggs hatching as the buds begin to burst. The larvæ attack the leaves, and when fully fed drop to the soil, emerging as moths in October or November. The best remedy is the use of the grease-band, a strip of grease-proof paper about 12 inches wide tied tightly round the trunk and smeared periodically with grease, such as the moth lime No. 35, failing which common cart-grease will do (*see* p. 963). This traps the moths and other larvæ. Or the trees may be sprayed with Paris green wash No. 11, or one of the lead-arsenate washes Nos. 10 and 39.

Wireworms are most destructive to tap-rooted crops. The parent, the click beetle, is a greyish insect about half an-inch long, and may often be seen in summer on the plants. The beetles lay their eggs on the ground

at the base of plants, and the grubs, wireworms, hatch out in due course and straightway bore holes into the roots or stems of plants. They are said to live for several years in the grub state. Heaps of rubbish are favourite haunts, and salt should be sprinkled on the decaying heaps. Fumigants liberally applied will in time exterminate both larvæ and pupæ.

Woolly Aphis.—There are many varieties of the aphis or louse, one of the most common being the woolly aphis or apple-root louse, or so-called American blight. The wingless females excrete a white cotton-like substance from glands on their back. Late in the year they lay their eggs and die, and the eggs hatch out in the spring. The lice puncture the shoots and produce excrescences which interfere with the flow of the sap and cause the tissues to be diseased. The remedy is to spray the trees thoroughly in February with caustic wash No. 42, or with kerosene emulsion No. 24, or lime, sulphur, and salt wash No. 62 in April.

Fuller particulars regarding these pests are given in leaflets published by the Board of Agriculture and Fisheries, 4 Whitehall Place, London, S.W., which can be obtained free by post on application to the Secretary. Letters of application need not be stamped. The leaflets are obtainable singly, also in sections, viz.: (1) Acts of Parliament, &c.; (2) Farm Animals, &c.; (3) Poultry and Bees; (4) Farm and Garden Crops; (5) Wild Birds, &c.; (6) Insect Pests (Crops); (7) Insect Pests (Fruit and Trees); (8) Injurious Fungi; *1d.* each section. Bound volumes of leaflets (1-100 and 101-200) are obtainable at *6d.* per volume.

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NOTES FOR REFERENCE

All preparations and substances which are used medicinally are indexed under their Latin titles, except in the case of communicated formulas for 'known, admitted, and approved' remedies, which are indexed according to their names—*e.g.*, 'Cough-mixture,' and the first word of the title—*e.g.*, 'Tasteless Cooling and Teething Powders.'

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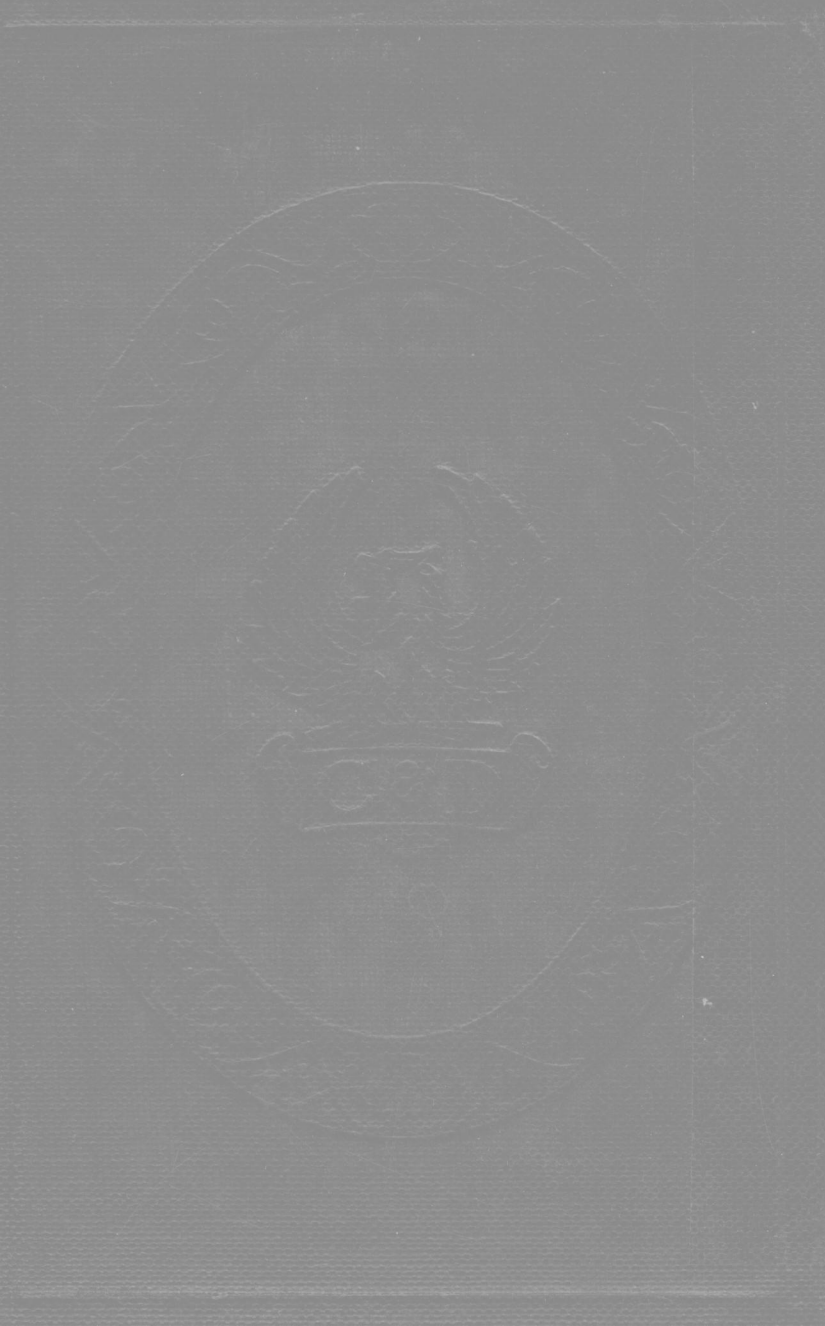
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